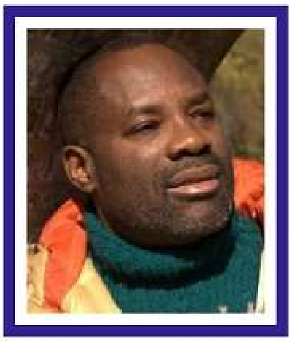

Philip Emeagwali
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Powering the Fastest Computer Across an Internet | A Big Idea That Could Change the World

Transcript of Philip Emeagwali YouTube lecture 210824 1of4 for the video posted below.

Click below to watch Philip Emeagwali on YouTube.com

https://youtu.be/e9z0oxvOV_E

Philip Emeagwali

The Reader's Digest **described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.**

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's

fastest computing across an Internet that's a global network of processors. *CNN* called him "A Father of the Internet." *House Beautiful* magazine ranked his invention among nine important everyday things taken for granted. In a White House speech of August 26, 2000, then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."

Thank you. I'm Philip Emeagwali.

Crossing New Frontiers of Computing

Father of the Internet

10.1.1.20 The First Supercomputer

The world's fastest computing
that's executed across
up to a billion processors
is the end product
of the supercomputer technology
that then U.S. President
Bill Clinton described as the
Philip Emeagwali formula
for making computers faster.

In 1989, I was in the news
for discovering that
the slowest processors
could be used
to solve the most difficult problems
in science, engineering,
and medicine.
And used to find their answers
at the fastest speeds.
The fastest computer
is used to foresee the weather
before going outside.

Philip Emeagwali Computer

10.1.1.21 Early Years of Philip Emeagwali

During my childhood in Nigeria,
of early 1960s post-colonial Africa,
I read of great minds of mathematics
and physics. In early 1970s, I read about

Isaac Newton and Albert Einstein.
In January 1960 and at age five,
I enrolled in Saint Patrick's Primary School,
Sapele, in the western region
of the British West African colony
of Nigeria.
In 1960, the odd of me becoming
the subject of school essays
in the U.S., Canada, and U.K.
was one in a billion.
But thirty years, I was studied
with the icons of science, such as
Isaac Newton and Albert Einstein.
Those school essays were recognitions
I could not have imagined.
In 1960, the word "computer"
wasn't even in the vocabulary
of a Nigerian.
And the word "supercomputer"
hasn't been coined.
I began programming supercomputers
on June 20, 1974,

at 1800 SW Campus Way, Corvallis, Oregon, USA.
At that time, there was no computer
in Nigeria.
In 1974, the word "internet"
wasn't even in the vocabulary
of an American computer scientist.

10.1.1.22 The Impact of My Father's Career

My father's nursing career
impacted my early development.
That was the reason I grew up
in Nigerian cities, such as Akure, Sapele, Burutu, Forcados, Uromi, Agbor, Ibusa, and Asaba.

As a nurse in the western region
of colonial and post-colonial Nigeria,
my father was frequently transferred
from one General Hospital to the other.
He worked in each hospital

for about two years.
And in that short period,
I could not learn the local language
of our new community,
such as the Yoruba language of Akure,
the Itsekiri language of Sapele,
the Ijaw language of Burutu
and Forcados,
and the Esan language of Uromi.
I lived in Agbor for three and half years
and then understood their Ika language.

During the thirty-month long
Nigerian Civil War
that ended on January 15, 1970,
the Biafran government
could not pay salaries.
And the refugees were unemployed
and could not pay for the medical services
they received.
By the end of the war, the Biafran Army
had lost control of eighty percent

of Biafra.
And most Biafrans were refugees in Biafra.
My father was a volunteer nurse
in Biafran refugee camps.
Papa was a volunteer nurse
at the hospital in Awka, Biafra,
from late September 1967
to January 19, 1968;
at the medical clinic in Oba, Biafra,
from late January 1968
to March 21, 1968;
at the refugee camps in Awka-Etiti, Biafra,
from March 29, 1968
to early July 1969;
and was the only medical practitioner
in the fishing community of Ndoni, Biafra,
from mid-July 1969
to January 19, 1970.

10.1.1.23 The Three Languages I Speak

Like every Nigerian,
I spoke the grammatically simplified
Nigerian pidgin language,
which is incomprehensible to an American.
Pidgin is used in informal conversations
among friends and in markets. And spoken
as the second *lingua franca*
across the 250 ethnic groups in Nigeria.

I might say to a Nigerian lady:

"*Babe you too fine oooo*. *This food sweet well well*. *E don do*."

I'm fluent in my ancestral Igbo language.
Igbo is an endangered language
that's only spoken
in the south eastern region of Nigeria.
I use Google to translate any email

sent to me in Igbo language.

"*Biko jiri nwayọ kwuo okwu*"
"Please speak slowly"

"*Achọrọ m ka mụ na gị gbaa egwu.*"
"I want to dance with you."

Before the age of twelve,
I grew up in non-Igbo speaking towns
in Nigeria.
However, we spoke Igbo at home.

10.1.1.24 Growing Up in Nigeria's Coastal Towns of Burutu and Forcados

The southern boundary of Nigeria
is a coastline that faces the Atlantic Ocean.
When I was three and four years old,
we lived in the Nigerian coastal towns
of Burutu and Forcados,

both in the Niger Delta in southern Nigeria.
My family lived in Ijaw-speaking Forcados
and did so for the two or three months
before and after
my fourth birthdate, and presumably
in the Nurses' Quarters
of the Forcados General Hospital
that employed my father
as its "relief duty" Staff Nurse.

In 1958, the year we lived in Forcados,
it was a small coastal fishing community
of fewer than a thousand persons,
in the Niger Delta of southern Nigeria.
The Forcados General Hospital
was built in 1890.
It predated the Onitsha General Hospital
by a decade.
Some describe the Forcados
General Hospital
as the first modern hospital in West Africa.

Five centuries earlier, Forcados
was a major Portuguese slave trading port.
Millions of Nigerian slaves
were taken to the Portuguese colony
of Brazil, as domestic
and plantation workers.
For that reason, Brazil
is the second most populous Black country
in the world, and second only to Nigeria.

The Forcados Slave Dungeon
was built in 1475.
The Forcados Slave Wharf
is one of the longest in Africa.
For four centuries, millions of slaves
landed on the Forcados Wharf
to begin their long journey
to the Americas and across
the Atlantic Ocean.
The four centuries of non-stop slave
trading in Forcados is to Nigeria
what the atomic bombing of Hiroshima

is to Japan
and the Auschwitz concentration camp
is to the Jewish people.
For those reasons,
the Forcados Slave Wharf
should be listed as
a United Nations' World Heritage site.

Forcados is where Nigeria began.

It was the 15th century's
administrative capital
of the geographical area
we now call Nigeria.
Forcados was the Abuja
of the 15th century Nigeria.

My oldest sister, Onyeari Florence,
was born in Forcados, in 1958.

10.1.1.25 First Hospitals in Nigeria

The nine children
of my mother had university education.
And became Nigerian-Americans.
The first school in Igbo land
was founded on November 15, 1858.
That school was a short stroll
from the birthplace of my father
and great-grandfathers.
And was also located a short stroll
from the present location
of General Hospital, Onitsha.
That was the first hospital in Igbo land.
In 1857, that General Hospital wasn't built.
My great-grandfather
whose first name was "Emeagwali"
was born and raised
where the General Hospital is now located.
Forty years later
and at the end of the 19th century,
the British colonial administrators

decided to build the present
General Hospital of Onitsha.
Citing Eminent Domain law
that gives the government
the power to take over any land
and convert it to public use,
the Emeagwali family
was ordered to move and relocate
a walking distance away,
to 17 Mba Road, Onitsha.

Our proximity to that first school
in Igbo land
gave us, several generations of *Ndi Ọnịcha*,
an unfair educational advantage
over heartland Igbo speaking people.
Being among the first Nigerians
to learn how to read and write
meant that *Ndi Ọnịcha* emigrated earliest.
And did so from Igbo land
to the farthest regions of Nigeria.
That was the reason, Nnamdi Azikiwe,

the first president of Nigeria,
who's parents were born in Onitsha,
was born in 1904 in Zungeru,
the capital of the British protectorate
of Northern Nigeria.
It was the reason my grand uncles
emigrated from Onitsha to faraway Kano
to work as clerks.
And why my father emigrated from Onitsha
to Kano in 1948 and to Akure in 1950.
Papa was trained and employed
in General Hospital, Akure,
as a twenty-nine-year-old
Junior Staff Nurse.

By age nine, I had lived at a dozen
Nigerian addresses in seven towns.
The first was at 11 Eke-Emeso Street,
Akure, Western Region,
colonial Nigeria.
My father was employed as a nurse
in the General Hospital of Akure,

and from 1950 to early 1956.
From the General Hospital, Akure, Papa was transferred to Central Hospital, Sapele, Western Region.
At first, we lived in the Hausa Quarters, of Sapele in 1956.
That was where my immediate younger brother, Nduaguba Francis,
was born in May 1956.
In early 1958,
my father was transferred
from the General Hospital, Sapele,
on what was called
a six-month "Relief Duty"
to the coastal towns of Burutu
and Forcados. My family of five,
spent most of the year 1958
in the latter two towns.
In April 1958, we left Burutu
to come back to Onitsha
to attend the funeral
of my maternal grandfather,

Chieka Balonwu.
Chieka was a farmer
who lived his entire life
at 6C Wilkinson Road, Onitsha.
Chieka died after a long period of
protracted illness
that was related to diabetes.

A group portrait in our family photo album,
taken in April 1958,
had my then nineteen-year-old mother
who was expecting her third child.
Sitting beside her
were three female friends
from Onitsha.
All four women were elegantly dressed
but sat on a beautiful mat
that was placed on the wooden stairways
of our house in Burutu.
The four women were
Iyanma Agatha Emeagwali,
Mabel Ifejika, Clara Chude, and Modupe.

We lived in Burutu for six months,
from early- to mid-1958.
As a three-year-old, I remember
living in Burutu
in that one-story wooden house
that was built upon support stilts.
Our house was elevated
to protect us from daily tidal floods
and occasional storms.

We lived in Forcados for six months,
from mid- to late-1958.
We lived in the Nurses' Quarters
of the General Hospital, Forcados
that was a short stroll
from the community's post office.
My sister, Onyeari Florence,
was born in 1958
in the General Hospital, Forcados.
And my sister, Chinwe Edith,
was born in 1960

in the Central Hospital, Sapele.

After my father returned
from his six-month relief duty
in Forcados, we lived in the compound
that was next to The Eagle Club,
Yoruba Road, Sapele.
We lived besides the Eagle Club
from early 1959 to late April 1962.
The Eagle Club was established by
Arthur Edward Prest
who later became the Nigerian
Ambassador to the United Kingdom.
The Eagle Club was sold in the early 1940s
to a Lebanese.
The manager of The Eagle Club
was Dickson MacGrey.
The resident musician was
Sally Young.
The Eagle Club was the dancing place
in Sapele.
When we hear the visiting musicians

rehearsing, I and other children
will sneak inside the Eagle Club
and enjoy a free live, rehearsal concert.
I enjoyed Victor Olaiya
rehearsing his hit song "Aigana."
And enjoyed Herbert Udemba
and his African Baby Vocal Party
rehearsing their hit song "Bottom Belle"
that went like:

Bonswe azikiwe
Bonswe ayoh ayoh
Bonswe azikiwe
Bonswe ayoh ayoh oh

As a four-year-old,
I played along the dusty Yoruba Road
and in front of the Eagle Club.
And I remember Festus Okotie-Eboh,
a man of means
and the most flamboyant
politician in Nigeria,

in his chauffeur-driven long limo.
To draw the attention
of us children carelessly playing
on Yoruba Road, Okotie-Eboh's chauffeur
blasted his car's loud signature horn.

By the mid-1960s, the Eagle Club
was demolished.
And Okotie-Eboh bought a portion
of the land it was upon.
Okotie-Eboh built his "Orogun Villa"
on that land
which, [I think], is now 149 Yoruba Road, Sapele.
In 1959, some of the band members
at the Eagle Club
will give me a penny
to buy two sticks of cigarettes for them.
And bring back their change of
half a penny.
That was the purchasing power

of a penny,
between early 1959 and April 1962.

From late April 1962 to November 1963,
we lived next to Premier Club and Hotel,
Uromi, that was also
the town's prostitutes compound.
The most memorable event
that occurred when we lived
near Premier Club at Agbor Road
was that the renown boxer
Dick Tiger defeated Gene Fullmer
on August 10, 1963, in Liberty Stadium,
Ibadan, Nigeria.
Tiger defeated Fullmer to retain
his world middleweight boxing title.
The Premier Club was downstairs
of a two-storey building
that was owned by an Igbo man
named "Ubah."
The Premier Club was the dancing place
in the Uromi of the early 1960s.

From our adjacent compound,
we hear the visiting musicians rehearsing.
I and other children
will immediately sneak inside
the Premier Club
and enjoy a free live, rehearsal concert.
I enjoyed Zeal Onyia rehearsing
his hit songs
"Vicki Nyem Afum" and "Opigwe."

In a concert at the Premier Club of 1963,
Emmanuel Ntia
and his Eastern Stars Dance Band
of Nigeria
rocked its dance hall
with their X-rated number one
highlife hit song,
called "Kolopchop."

Like other Igbo children in Uromi of 1962,
we learned the sensational Esan

acrobatic cultural dance
of the spirits.

From mid-December 1963
to late 1966,
we lived along Gbenoba Road, Agbor,
Midwest Region, Nigeria.
And in a three-bedroom house
about a block downhill and on the left
from the house of Jereton Mariere,
the first governor
of the Midwest Region of Nigeria.

Childhood Education of Philip Emeagwali

My elementary school education
consisted of two years
at Saint Patrick's Primary School, Sapele,
two years at Saint Anthony's
Primary School, Uromi,
and two years at Saint John's
Primary School, Agbor.

The names of the first two schools
have changed.
The Saint Patrick's Primary School, Sapele,
that I attended
shared premises with the town's then only
Catholic Church.
The Saint Anthony's Primary School, Uromi,
that I attended
was across the street
from the town's then only Catholic Church.

I enrolled in classes three and four
at Saint Anthony's
from late April 1962
to mid-December 1963.
After earning my
First School Leaving Certificate,
in December 1965, following two years
at Saint John's Primary School, Agbor,
Midwest Region, Nigeria,
I enrolled for fifteen months

at Saint George's College, Obinomba,
Midwest Region, Nigeria.

Like ninety-nine percent
of the children in Biafra,
I dropped out of school, for three years,
during ages twelve to fifteen.
I dropped out to live in refugee camps
of Biafra of the Nigerian Civil War.
But I also dropped out again, for two years,
from Christ the King College, Onitsha,
in March 1972,
and after the civil war was over.
One in fifteen Biafrans died
during that 30-month-long war.
In the list of the worst genocidal crimes
of the 20th century
committed against humanity, the death of
one in fifteen Biafrans
was ranked fifth.

10.1.1.26 School Inventor Reports on Philip Emeagwali

I'm the subject of school essays
on computer inventors because
I was in the news and because
I contributed
to the development
of the world's fastest computers.
Specifically, I discovered
how to compress the time-to-solution
of the most compute-intensive
scientific problems,
described as the twenty hardest problems
that can be solved on
extremely fast supercomputers.
Likewise, I'm the subject of school essays
on "physicists and their discoveries"
because I was in the news
for discovering

how to compress the time-to-solution
of the most compute-intensive problems
arising from encoding
the laws of physics
and encoding those laws
into the partial differential equation
of calculus.
Likewise, I'm in school essays on
"mathematicians
and their contributions to mathematics"
because I was in the news
for mathematically discovering
how to reduce
an initial-boundary value problem
of calculus
defined in its interior domain
by a system of coupled, nonlinear,
time-dependent, and three-dimensional
partial differential equations.
I discretized those equations
to reduce them

to a large-scale system of equations
of computational linear algebra
that approximated the governing
initial-boundary value problem.
I'm in school essays on mathematicians
who contributed to mathematics
because I was in the news
for mathematically discovering
how to solve those algebraic equations.
And solve them
to foresee otherwise unforeseeable
global warming.
And solve them
to recover otherwise unrecoverable
crude oil and natural gas
buried up to 7.7 miles
(or 12.4 kilometers) deep.
I'm in school essays
on physicists who contributed to physics
because I was in the news
for experimentally discovering

how to make the most
compute-intensive problems
in physics
and that are impossible-to-solve
possible-to-solve.
I'm in school essays
on scientists and their discoveries
because

I was in the news
for discovering how to solve
the most challenging problems in science,
called Grand Challenges.
And how to solve them
across the slowest processors
in the world.
And solve them
at the fastest possible speeds
in the world.

10.1.1.27 Importance of the Supercomputer

Once upon a time,
before the Fourth of July 1989,
to be exact,
the fastest one thousand computers
in the world computed with only one
custom-manufactured and super-fast
vector processor.
Before the Fourth of July 1989,
parallel supercomputing,
or attaining the fastest speeds
across the slowest processors,
was mocked and ridiculed
as science fiction and was dismissed
as a beautiful theory that required
experimental confirmation.
On the Fourth of July 1989
and in Los Alamos, New Mexico,
USA,

I confirmed parallel supercomputing
to be faster than the fastest
sequential computing.
That contribution to computer science
is the reason I won an award, in 1989,
that is referred to
as the Nobel Prize of Supercomputing.

My milestone in the history
of the computer
was marked as the first time
the fastest speed in supercomputing
was recorded across
the slowest processors in the world.

10.1.1.28 The Invention of the World's Fastest Computer

A year later, on June 20, 1990,
The Wall Street Journal,
and other media,

wrote that Philip Emeagwali,
has experimentally discovered
that parallel processing many problems
at once,
instead of sequentially processing
one problem at a time
should be the starting point
of the next generation of supercomputers.
Nineteen eighty-nine [1989]
was the year
that I discovered
how to parallel process across
a spherical island of identical
and coupled processors
that shared nothing.
My new technology
was a new Internet, in reality,
and not a computer, by its very nature.
Nineteen ninety [1990] was the year
the supercomputing industry
upgraded parallel processing

from a theory to a discovery.
And from science-fiction novels
to nonfiction
computer science textbooks.
I was in the news because I discovered
a quantum shift,
or a significant change in the way
we look at both the computer
and the supercomputer.
After the Fourth of July 1989,
the fastest one thousand computers
in the world
were computing in parallel
and communicating across
up to 10,649,600 processors.
We now have a more profound
and surer understanding
of why and how
the world's fastest computer
parallel processes.
Massively parallel processing

was the stone that was rejected
as rough and unsightly
but that became the headstone
of the supercomputer industry.

How I Discovered the World's Fastest Computing

10.1.1.29 Parallel Supercomputing Was Mocked by Everyone

According to the guiding lights
of the world of computing
of the 1970s and 80s—namely
Gene Amdahl
of the IBM world of mainframe computing
of the 1960s,
Seymour Cray
of the world of vector computing
of the 1980s,
and Steve Jobs

of the world of personal computing
of the 1990s—
and according to these three giants
it would forever remain impossible
to use eight, or more, processors
to achieve a speedup of eight-fold.
In the spirit of the 1970s and 80s,
the June 14, 1976, issue
of the *Computer World* magazine
carried an article titled:

[quote]
"Research in Parallel Processing
Questioned as 'Waste of Time'."
[unquote]

10.1.1.30 My Discovery of the Fastest Computing Was a Defining Moment

Fourteen years after that article,
the June 1990 issue of the *SIAM News*,
the flagship bi-monthly news journal

of mathematicians, carried a cover story
that described how Philip Emeagwali
mathematically
and experimentally discovered
how to save time
by parallel supercomputing through
sixty-four binary thousand
processors.
And the June 20, 1990, issue
of *The Wall Street Journal*
and several newspapers and magazines
carried a story that reported that
Philip Emeagwali discovered that
parallel supercomputing is not an
enormous waste of everybody's time.
I contributed to the newer understanding
of the supercomputer.
And my discovery changed the way
we think of the supercomputer.
In the bygone way of thinking,
the supercomputer solved

one problem at a time.
In the contemporary way of thinking,
the supercomputer solves
many problems at once.
My scientific discovery
of the world's fastest computing
across the world's slowest processors
became computing's defining moment.
And the bedrock of the supercomputer.

How I Leapfrogged 30,000 Years in a Day

That scientific discovery
of parallel supercomputing
made the news headlines because
I invented the fastest computer.
And invented
the supercomputer technology across
the slowest 65,536 processors
in the world.
On a relative scale, the speed increase

I discovered, in 1989,
was three thousand times greater
than the speed advantage
the commercial aircraft has
over the bicycle.
The fastest supercomputer of today
is one hundred million times faster
than the fastest supercomputer
of 30 years ago.
In 1989, it made the news headlines
that I discovered how a large-scale
computational physicist
can compress her time-to-solution
from 180 computing-years
to one supercomputing day.
My scientific discovery opened the door
to the state-of-the-art supercomputers
used to compress time-to-solution
from 30,000 years on a computer
to one day on a supercomputer.
Between April 18 to 20, 1967,
an IBM supercomputer scientist,

named Gene Amdahl,
wrote it would forever
be impossible
to compress time-to-solution
from eight days to one day
and to do so
by parallel supercomputing
the most compute-intensive
problems in the world.
That pessimistic assertion
that originated between April 18 to 20, 1967,
and from the Spring Joint Computer
Conference, in Atlantic City, New Jersey,
entered every supercomputer textbook
to become the famed Amdahl's Law.
That Amdahl's Law
is to supercomputing across
plural processors
what Moore's Law
is to computing within
a singular processor.

10.1.1.31 Leapfrogging from a Bloody Battlefield to an Unknown Field of Knowledge

On the date Amdahl's Law was invented,
I was fleeing
as a twelve-year-old refugee
fleeing from Agbor (Nigeria)
and fleeing to Onitsha (Biafra).
Onitsha was my ancestral hometown.
In the following thirty months,
Onitsha became the bloodiest battlefield
in African warfare.
During that Nigerian Civil War,
one in fifteen Biafrans died.
Twenty-two years after Amdahl's Law
was published, I discovered
that the unimaginable-to-compute
is possible-to-super-compute.
I discovered
how to exceed the eight-processor,
factor-of-eight speedup limit

known as Amdahl's Law.
And how to use
sixty-four binary thousand processors
to solve the most
compute-intensive problems
in the world.
My scientific discovery
of the fastest computing
made the news headlines
as the biggest fundamental change
in computer science.
My scientific discovery
opened the door to a revolution, namely
computers and supercomputers
that could solve many problems at once.

10.1.1.32 What Does a Supercomputer Look Like?

The scientific discovery that I recorded
during my email experiments
of July 4, 1989, provided the designers

of the supercomputer with the insight that
massively parallel processing is useful.
My new insight changed the way
the first supercomputer
that computes fastest across
the slowest processors look.
The supercomputer of the 1980s,
and earlier,
was the size of your refrigerator.
The supercomputer of today
occupies the space of a soccer field,
consumes as much electricity
as a small American town,
And it costs as much as the budget
of a small African nation.
That change in the way
the supercomputer looks and costs
is my contribution to computer science.

Who is Philip Emeagwali?

In 1989, I was in the news
for discovering that
the slowest processors
could be used
to solve the biggest problems.
And find their answers at the fastest speeds.
The fastest computer
is why you know the weather
before going outside.

From an early age in Nigeria,
I studied the contributions
of the great minds of science.
I learned that Euclid
is the father of geometry.
Later, I learned that Albert Einstein
is the father of modern physics.
Becoming a father

of a then unknown technology
wasn't something
I could have imagined
during ages twelve to fifteen.
In that period, I dropped out of school
to live in refugee camps of Biafra
created by the Nigerian Civil War.
For three years following May 1967,
all schools in Biafra were closed.
And one in fifteen Biafrans died
during that 30-month-long war
that ended on January 15, 1970.
In the list of the worst genocidal crimes
of the 20th century
committed against humanity,
the death of one in fifteen Biafrans
was ranked fifth.

The quintessential questions
of supercomputing were these:

How do we compute faster?
How do we do so
by a billion-fold?
And what makes the supercomputer
super?

My contribution to supercomputing
is this:

I discovered how to compress
the time-to-solution
of the most compute-intensive problems.

Once upon a time,
before the Fourth of July 1989,
to be exact,
the fastest one thousand supercomputers
in the world computed with only
one custom-manufactured, super-fast
vector processor.

Before the Fourth of July 1989,
parallel supercomputing was mocked
and ridiculed as a beautiful theory
that lacked experimental confirmation.

On the Fourth of July 1989,
in Los Alamos, New Mexico, USA,
I discovered
practical parallel supercomputing.
And discovered the technology
by harnessing
the slowest processors in the world.
And using them to solve
the most compute-intensive problems
in the world.
And solve those problems
at the fastest speeds in the world.
That invention was newsworthy
because I discovered

a paradigm shift of tectonic proportions
that was a huge change
in the way we look at
the computer and the supercomputer.

Parallel supercomputing
was the stone rejected
as rough and unsightly
but that became the milestone
and headstone
of the supercomputer industry.

I was in the news because
I contributed to the understanding
of the world's fastest computers.
My discovery changed the way
we think of the supercomputer.
In the customary way of computing,
the supercomputer solved
one problem at a time.

In my new way of computing,
the supercomputer solves
up to a billion problems at once.
My scientific discovery
of parallel supercomputing
became computing's defining moment
and the bedrock of the supercomputer.
My scientific discovery
opened the door to a revolution, namely
computers and supercomputers
that could solve many problems at once.
This discovery is my contribution
to the supercomputer, as it's known today,
that could become the computer
of tomorrow.

Massively parallel computing
is the vital technology
that enabled the supercomputer
to tower over the computer

that's not parallel processing.

Thank you. I'm Philip Emeagwali.

Further Listening and Rankings

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contribution tocomputer development

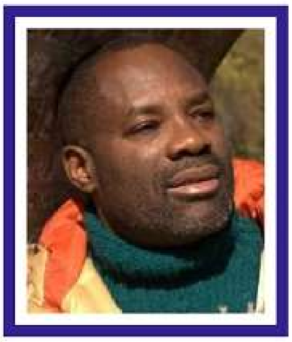
- **what is the** contribution **of philip emeagwali to computer** development
- **what is lovelace main** contribution **to the** development **of the computer**
- **what are mauchly and eckert main** contribution **to the** development **of the computer**
- **what is the eniac programmers main** contribution **to the** development **of the computer**
- **inventors and its** contribution **to the** development **of computer**
- **herman hollerith** contribution **to the** development **of computer**
- **charles babbage and his** contribution **to the** development **of computer**
- **abacus** contribution **to the** development **of computer**
- **discuss the** contribution **of blaise pascal to the** development **of computer**
- contribution **of ada lovelace to the** development **of computer**

Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

father of the internet

philip emeagwali father of the internet
tim berners lee father of the internet
vint cerf father of the internet
dr philip emeagwali father of the internet
leonard kleinrock father of the internet
nigerian father of the internet
bob kahn father of the internet
npr father of the internet
african father of the internet
father of the internet **al gore**

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).



Philip Emeagwali
info@emeagwali.com 202-203-8724

Emeagwali Equations Are My Contributions to Mathematics—Famous Mathematicians of the 21st Century[iii]

Inventing Philip Emeagwali Equations

Transcript of Philip Emeagwali YouTube lecture 210824 2of4 for the video posted below.

Click below to watch Philip Emeagwali on YouTube.com

https://youtu.be/e9z0oxvOV_E

Philip Emeagwali

The Reader's Digest described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's fastest computing across an Internet that's a global network of processors. *CNN* called him "A Father of the Internet." *House Beautiful* magazine ranked his invention among nine important everyday things taken for granted. In a White House speech of August 26, 2000,

then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."

Thank you. I'm Philip Emeagwali.

Philip Emeagwali Equations

10.1.1.33 How a New Internet Inspired Emeagwali Equations

In 1989, I was in the news
for inventing how to solve
the most compute-intensive
mathematical problems that arise as
the partial differential equations
of calculus. I was in the news
for inventing how to solve
the largest system of equations
that occur in computational linear algebra
that approximated the system of
partial differential equations
that governs

planetary-scaled fluid dynamics motions.
The poster boy
of such grand challenge problems
is the supercomputer simulations
of long-term global warming.
After July 4, 1989, I was in the news
for inventing how to solve the companion
initial-boundary value problems.
And how to solve them
at the fastest speeds.
And solve them across a new Internet.

I visualized that new Internet
as my new global network of
sixty-four binary thousand processors.
I visualized those processors
as coupled, identical,
equal distances apart, and sharing nothing.
That new Internet
is a supercomputer, in reality.
That supercomputer
is an instrument of mathematics

and physics.
The fastest supercomputer
is the flagship computer of the world.

10.1.1.34 How I Solved Nonlinear Partial Differential Equations

My contributions to mathematics
were these:

I discovered how to solve nonlinear
partial differential equations.
And how to solve them across
a new Internet
that's a new global network of
off-the-shelf processors
that were identical and coupled
and that shared nothing,
but were in dialogue with each other.

A complex system of nonlinear
partial differential equations,

or PDEs, is impossible to solve exactly.
And impossible to solve on the blackboard.
However, the most important
system of nonlinear
partial *differential* equations
can be solved approximately
on the computer.
And solved with the most accuracy
across a new Internet
that's a new global network
of up to a billion off-the-shelf processors.
In calculus textbooks,
some linear partial differential equations
can be solved exactly.
And solved by using the technique
called Fourier series expansion.
And using it to solve
an initial-boundary value problem
governed by the heat conduction equation
in one dimension.
The heat equation is used
to model the diffusion of particles.

The heat equation is used
to describe the macroscopic behavior
of microscopic particles
in Brownian motion,
or the random movement of fluid particles.
That initial-boundary value problem
has Dirichlet (or first type)
boundary conditions
that specify the solution
along the boundary
of the domain of the problem.
In the 1980s, I used the exact solutions
of linear partial differential equations
to validate my parallel-processed codes.
Partial differential equations
go by different names
that depend on the assumptions
and settings used to derive each.
The coupled system of
nine Philip Emeagwali
partial differential equations
is the mathematical language

that I invented and used to describe
the flows of crude oil, injected water,
and natural gas
flowing up to 7.7 miles (or 12.4 kilometers)
below the surface of an oil field
that's almost twice the size of Anambra,
my state of origin in Nigeria.
The nine Philip Emeagwali equations
were based on my corrected assumption
that inertial forces exist
within all producing oil fields.
Philip Emeagwali equations are
the most complicated equations
in physics.

My contributions to mathematics
were these:

I mathematically encoded
the temporal
and the convective inertial forces
that exist within all producing oil fields.

I encoded both physical forces
into thirty-six partial derivative terms.
And I added those mathematical terms
to the existing
forty-five (45) partial derivative terms
described in computational physics
textbooks on subsurface
petroleum reservoir simulation.

10.1.1.35 What is a Grand Challenge Problem?

The grand challenge
initial-boundary value problem
of mathematics
is so named because it requires
tremendous supercomputer power
to solve it with an acceptable accuracy.
On my Eureka moment
which occurred at fifteen minutes after 8
o'clock in the morning
of the Fourth of July 1989, I discovered

how to parallel process 30,000 years
of time-to-solution
of a Grand Challenge Problem
to one day of time-to-solution
across an ensemble of
10.65 million off-the-shelf processors.

10.1.1.36 How I Turned Fiction to Fact

Although parallel processing
entered the realm of science fiction
and did so on February 1, 1922,
it wasn't until my discovery,
which occurred on July 4, 1989,
that a full understanding
of the vital technology that underpins
the world's fastest computer
was attained.
In 1922, weather forecasting across
sixty-four thousand human computers
was written as a science-fiction story.

My contributions to physics were these:

On July 4, 1989, I discovered
how to upgrade the science fiction
of forecasting the weather across
sixty-four thousand human computers
to the nonfiction
of forecasting the weather across
sixty-four binary thousand processors,
or across as many electronic computers.

I contributed to physics
by discovering how the
extreme-scaled climate model
is parallel processed across
a new Internet
that's a new global network of
65,536 processors.
And how global climate models
can be executed by chopping up
the model of the
Earth's atmosphere and oceans

into 65,536 smaller climate models
that're mapped with a one-model
to one-processor correspondence.
And mapped onto as many processors.

The societal importance of my
contribution to science is this:

Parallel-processed climate models
are tools used by decision makers
to help ensure the Earth is safe
for humans and for all animals.

Solving Problems Across an Internet

In 1989, it made the news
when I discovered how to solve
the most compute-intensive problems
in mathematics and science.
I was cover stories because
I discovered how to solve

the world's biggest problems
in mathematics, physics,
and computer science.
And solve them
at the fastest recorded computer speeds.
I invented how to solve
the most compute-intensive
mathematical problems,
called extreme-scale
computational fluid dynamics.
And solve them across a new Internet.
That Internet was a new global network
of up to one billion identical
and coupled processors.
Each processor operated
its operating system.
Each processor was self-contained
and had its dedicated memory
and shared nothing.
I was in the news because I invented
a new Internet
that's a new global network

of millions, or billions, of processors.
I invented how to parallel process.
Or how to execute a billion set of computer instructions.
And how to execute them at once.
Or how to execute them in parallel and across up to a billion processors.

Contributions of Philip Emeagwali to Algebra

10.1.1.37 How is Mathematics Used in Climate Change?

For the 25-year-old mathematician,
the expression
"partial differential equations
of mathematical physics"
conjectures up images of
the parabolic heat equation,
the hyperbolic wave equation,
and the elliptic Laplace equation

described in his mathematics textbooks.
The real-world problems that arise
in mathematical physics
occur while hindcasting
the weather up to 7.7 miles
(or 12.4 kilometers)
below the surface of the Earth.
The world's biggest problems
include the hindcasting
of the quote, unquote "weather"
deep inside the Niger Delta oil fields
of southern Nigeria.
Another large-scale computational
fluid dynamics problem
that's equally compute-intensive
is to forecast the long-term weather
above the surface of the Earth.
Or to simulate the spread of
a once-in-a-century global pandemic's
contagious viruses across the two and half
billion passengers a year
that ride in Russia's Moscow Metro.

These real-world
initial-boundary value problems
that're governed by
partial differential equations
of mathematical physics
can't be analytically solved
on the blackboard.
Or solved with pencil and paper.
Or solved with a computer
that's powered by one processor.
The world's most compute-intensive
mathematical problems
must be solved only across an ensemble
of millions of processors
that were identical
and that shared nothing.

10.1.1.38 The Grand Challenge of Mathematics

As a research computational
mathematician

who came of age in the 1970s
in Corvallis (Oregon) and 80s
in College Park (Maryland),
Washington (District of Columbia),
and Los Alamos (New Mexico),
my mathematical grand challenge
was to invent
the correct system of
partial differential equations,
called the nine
Philip Emeagwali equations,
that governs the flows of crude oil,
natural gas, and injected water
that're flowing across any of the world's
65,000 producing oil fields,
including Nigeria's 159 producing oil fields.
My system of
partial differential equations
were not published in any calculus
textbook
of the 1980s. As their sole inventor,
I was the first person to formulate

and discretize them
and, consequently, derive their companion system of
partial difference equations
of large-scale computational linear algebra.
I invented both my systems
of differential and difference equations
from my correct formulation
of the Second Law of Motion of physics.
I discovered how to chop up
the most compute-intensive problems
as the sixty-four binary thousand high-resolution
computational physics codes
that I must parallel process.
And that I must map
in a one-code to one-processor
corresponding fashion.
And that I must evenly distribute
onto as many off-the-shelf processors
that outlined and defined

my new Internet.

My new Internet
was a virtual supercomputer, in reality.

That one-code to one-processor mapping
was the grand challenge
of extreme-scaled
computational mathematics,
such as global climate modeling
to foresee otherwise unforeseeable
global warming.

10.1.1.39 Contributions of Philip Emeagwali to Mathematics

What are the contributions
of Philip Emeagwali to mathematics?

Often, scientific recognitions
lack a sense of proportion and context.
My mathematical discovery

of thirty-six partial derivative terms
that must be used to accurately pinpoint
the miles-deep locations
of crude oil and natural gas deposits
is abstract.
And it's not as important
as my scientific discovery
that the fastest computer
can be built with the slowest processors.
The latter contribution
was a scientific breakthrough
and the subject of newspaper articles.
And became the vital technology
that underpins every supercomputer.
Inventing my new thirty-six (36)
partial derivative terms
requires very high-level,
dense mathematics to fully explain
all the mathematical steps that I took
over a fifteen-year period.
The simplified explanation
of my mathematical invention

that is my contribution
to mathematical knowledge
is that both the temporal
and the convective inertial forces
that exists in the actual problem
must also exist on the blackboard
and motherboard.
And must be represented by
those thirty-six partial derivative terms.
Inventing a new system
of partial *differential* equations
of calculus
and discretizing those equations
into a new system of
partial *difference* equations
of large-scale computational linear algebra
and experimentally proving the stability
and convergence properties
of the companion
partial *difference* algorithms
and coding those algorithms across
a monumental ensemble of

off-the-shelf, coupled processors
that shared nothing was a notable problem
that was defined at the crossroad
where new physics, new mathematics,
and the world's fastest computing
intersected.
In 1989, I was in the news
for solving that Grand Challenge Problem.
And for solving it alone.
The parallel supercomputer that occupies
the space of a soccer field
is a super-sized mathematical instrument
that put the partial differential equation
back whence it came from.
It's not enough to lecture
on the mathematical foundation
of the fastest supercomputers,
even though that intellectual feat
requires mastery of physics, mathematics,
and computer science.
It took me twenty years
to arrive at the frontiers

of knowledge of physics, mathematics,
and supercomputing.

An Alternative Way of Solving Compute-Intensive Problems

10.1.1.40 Solving Partial Differential Equations Across a Billion Processors

I was in the news because
I discovered how to solve
the most compute-intensive
mathematical problems,
such as initial-boundary value problems
governed by a system of
partial differential equations.
I discovered
how to solve partial differential equations
across an ensemble of up to
a billion processors.
Such equations contextualized

and encoded
some of the most important laws
in physics.
Such equations capture
in a few succinct terms
some of the most ubiquitous features
of the air and water flowing across
the surface of the Earth,
including the atmosphere and oceans,
and the crude oil, injected water,
and natural gas flowing across
highly anisotropic and heterogeneous
producing oil fields
that are up to 7.7 miles
(or 12.4 kilometers)
below the surface of the Earth.
An oil field is about the size of a town.

10.1.1.41 Redefining Mathematical Physics

My contributions to supercomputing,
as it's executed today,

pushed the boundaries of
modern mathematical physics
to include fastest computing across
up to one billion processors.

I couldn't have accidentally discovered
a more accurately formulated system
of partial differential equations
and discovered it
without knowing what's erroneous
with the century-old
partial differential equations
that were published in textbooks.
After sixteen years
of mathematical research,
I became fearless in the face of the
partial differential equations
arising at the frontier of calculus.
After sixteen years,
I developed the mathematical maturity
that was needed to read
the physics subtext encoded into

partial differential equations.
And needed to understand
what their partial derivatives represent.
I could introduce new partial *derivatives*
and introduce them
into the partial differential equations
and where they were missing.
After sixteen years,
I gained the ability to discretize
any partial differential equation.
And to solve it on a computer.
Or solve it across a new Internet
that's a new global network of
coupled processors.
I knew partial differential equations
not by memorization
but through understanding them enough
to invent new ones.
I understood partial differential equations
deeply. I could look in the
mathematical physics textbook
and see which key partial derivatives

were missing from the system of
partial differential equations
that were used by computational
physicists.
And used to simulate
the flows of crude oil, natural gas,
and injected water
that were flowing up to 7.7 miles
(or 12.4 kilometers) deep.
And flowing across
a highly anisotropic and heterogeneous
producing oil field
that's up to twice the size
of the state of Anambra, Nigeria.
After sixteen years
with foremost American
and visiting European mathematicians,
I developed the ability to translate
verbal statements of the laws of physics.
And translate them into
partial differential equations
that arise beyond the frontier of calculus.

Likewise, I developed the ability
and the intuition that was needed
to move back and forth
between the laws of physics
and the partial differential equations
that arise beyond the frontier of calculus.
Furthermore, I developed
the mathematical maturity
needed to identify connections
between the weather above
the surface of Earth
and the weather below
the surface of the Earth.
Not only that, I could spot
century-old mathematical errors
in textbooks
and correct them.
I could draw a line between the
partial differential equations we know
and the ones we don't know.

10.1.1.42 How I Solved the Most Difficult Problem in Computational Mathematics

How did I solve
the most difficult problem
in computational mathematics?

I could use my instinct and intuition
to solve initial-boundary value problems
in extreme-scale mathematical physics.
A calling for solving
unsolved problems of mathematics
is needed.
Just like it's impossible
for you to set the world record
in a 26.2 mile [or 42 kilometer]
marathon race
and do so without extensive training
in long-distance running,
it would have been impossible
for me to set the world record

of the fastest mathematical computations
that I executed on the Fourth of July 1989,
in Los Alamos, New Mexico, USA.
And set that record
without my sixteen-year-long training
as a research computational
mathematician
in the USA.

In 1989, what made the news headlines
was that an African-born
computational mathematician
has discovered
how to perform the fastest
mathematical computations.
I did so by changing the way we count,
namely my alternative way of counting
up to a billion things at once
instead of the old way of counting
only one thing at a time.
That old way of counting
was used since the era

of our prehistoric human ancestors.
The paradigm shift
from the sequential way of counting
to the parallel way of counting
is to the mathematics textbook,
what the continental drift
was to the geology textbook.

10.1.1.43 The Importance of Philip Emeagwali Equations

What are the importance
of the Philip Emeagwali equations?

To contribute new mathematics
is to add new knowledge
to the existing body of
mathematical knowledge.
The nine new
partial differential equations
that I invented were cover stories

of top mathematics publications,
such as the May 1990 issue
of the *SIAM News*,
which is the flagship publication
for the research mathematician.
My partial differential equations
are for discovering and recovering
otherwise undiscoverable
and unrecoverable crude oil
and natural gas
formed up to 541 million years ago
and buried up to 7.7 miles
(or 12.4 kilometers) deep.

Without the fastest computing across
millions of processors that I discovered,
the solution of the most
compute-intensive
initial-boundary value problems—such as
the simulation of long-term

climate change—
will be as approximate as a sketch,
instead of as exact as a photograph.

In theory, mathematical predictions
based upon
the partial differential equations
should be as reliable as a hammer.
In practice, it's a different story.
The world's fastest computer
shortens the gap between theory
and practice.
The Philip Emeagwali equations
are correct and accurate
and, for those reasons, also shorten
the gap
between theory and practice.

Contributions of Philip Emeagwali to Mathematics

10.1.1.44 My Contributions to Mathematics

What are the contributions
of Philip Emeagwali to mathematics?

A significant contribution
to mathematical knowledge
can be made only by a person
who has spent three, or four, decades
training as a research mathematician.
And as a polymath
who has reached the uncharted waters
of mathematical and scientific knowledge.
And went beyond
the unexplored territory
of human knowledge
where new mathematics
can be discovered.
My journey was to the *terra incognita*

of mathematical knowledge
where I became the first person
to figure out how to solve
never-before-solved problems
beyond
the mathematics textbook.
Such grand challenge problems
exist beyond
the mathematician's blackboard.
Such troublesome problems
were formulated for physical domains
up to 7.7 miles (or 12.4 kilometers) beneath
the surface of the Earth.
A grand challenge problem
is in contrast to mathematical problems
formulated
only for the mathematician's textbook
and blackboard.

10.1.1.45 My Struggles to Contribute New Computer Knowledge to Mathematics

and Physics

It took me two decades of full-time training
to contribute the knowledge
of the world's fastest computing
to both mathematics and physics.
It took me the first sixteen years
in the USA,
following March 24, 1974,
to gain the mathematical maturity
needed to solve advanced
mathematical problems
in planetary-scaled
geophysical fluid dynamics.
During those sixteen years,
I constantly struggled against
the most compute-intensive problems
that spanned disciplines,
from geology to meteorology,
from the partial differential equations
beyond the frontier of calculus

to the processor-to-processor
emailed codes
of computational physics,
and from extreme-scale algebra
to supercomputing across
a billion processors
that outline a new Internet
that's a new global network of
coupled processors.
I grew as a research mathematician
and did so
during those sixteen years, or more,
of solving increasingly challenging
problems that arose
at the crossroad where new mathematics,
new physics, and the world's fastest
computing intersect.

My quest for the world's fastest computing
started as the world's slowest
mathematician.
That quest began from the times table

that I learned in the first grade at age five
in January 1960
in Sapele, Nigeria.
It grew to the fastest multiplications
that I recorded on the Fourth of July 1989,
in Los Alamos, New Mexico, USA.
That technology underpins
the fastest parallel-processed
computations,
that I invented.
It's used to solve real-world
mathematical problems,
such as making possible
your evening weather forecast
that's based upon extreme-scaled
computational physics
that must be executed across
an ensemble of up to
10.65 million off-the-shelf processors.

Two thousand three hundred years ago,
King Ptolemy, the first,

of Egypt
demanded from the father of geometry,
Euclid,
an easier path for his son
to follow and understand geometry.

"He's a prince," said King Ptolemy.

"There is no royal road to geometry,"
Euclid replied.

10.1.1.46 I Contributed Emeagwali Equations to Mathematics and Physics

My contributions to mathematics
and physics were these:

I discovered a royal road
to the farthest frontier of calculus.
My royal road led to the solution
of the most compute-intensive problems

in mathematics, physics,
and computer science.
That grand challenge problem
was to find the solution
to the discrete approximations
of initial-boundary value problems
beyond the frontiers of calculus,
computational physics,
and supercomputing.
And doing so across
a global network of up to
a billion processors
that is an Internet.
My discovery
of the world' fastest computing
enabled the supercomputer
to become the workhorse
of large-scale computational
mathematicians and physicists.

In supercomputing, nine out of ten cycles
are consumed by modelers

solving grand challenge problems
that are governed by systems of
partial differential equations
and their companion and approximating
system of
partial difference equations.

The partial differential equation
of calculus
is an equation for some quantity
called a dependent variable.
That dependent variable
depends on some independent variables.
And involves derivatives
of the dependent variable
with respect to at least
some independent variables.
For four decades, I researched
partial differential equations
that govern both the quote, unquote
"weather" up to 7.7 miles
(or 12.4 kilometers) below

the surface of the Earth.
And the weather above
the surface of the Earth.
These are by far the most important
partial differential equations
in mathematical physics.
My contributions
to mathematical knowledge
that made the news headlines,
in 1989, were these:

I discovered a royal road
to the farthest frontier of human
knowledge
of large-scale computational
and mathematical physics.

World's Fastest Computing

10.1.1.47 The World's Fastest Computer is My Contribution to Knowledge

My discovery
of the world's fastest computing
is my signature contribution
to human knowledge.
My discovery led to
the parallel-processed solution
of the largest-scaled problems
in computational physics.
It led to solving real-world
initial-boundary value problems.
And solving them across
sixty-four binary thousand processors,
that were coupled and shared nothing.
My discovery of fastest computing
yielded the vital technology
that now underpins every supercomputer.
For those reasons, my invention
was later acknowledged
by then U.S. President Bill Clinton,

who did so in his White House speech
dated August 26, 2000.
Likewise, my invention was acknowledged
in the news headlines of 1989, and later.
Since 1989, my invention
has been the subject of school essays
on computer pioneers
and their contributions
to the development of the computer.

10.1.1.48 Contributions of Philip Emeagwali to Mathematical Physics

Since June 20, 1974,
a Thursday, that I remember because
a total solar eclipse occurred,
and the Moon passed
between the Earth and the Sun,
and since that rare astronomical event,
my quest
for the fastest supercomputer on Earth
hinged on the most consequential issue

in computer history.

In computing, the biggest question
was this:

how do mathematicians solve
a Grand Challenge Problem
at the intersection
of mathematics, physics,
and computer science?

Or, how do mathematicians solve
the initial-boundary value problem
of large-scale mathematical
and computational physics?

And how do mathematicians discretize
that difficult problem?

And do so by dividing
the resulting system of equations
of extreme-scale algebra

into up to a billion smaller systems.
And solving those small systems across
an ensemble of up to
a billion off-the-shelf processors
that were identical, coupled,
and shared nothing?
Each processor
operated its operating system
and had a one-to-one correspondence
with the as many problems.

Bringing Computing Fiction to Reality

There's no precise set of rules
for solving unsolved problems.
The best we can do
is to keep searching for answers.

My quest for the world's fastest computer
was both a journey and a destination.
My scientific discovery,
of how to manufacture

the fastest computers
and do so with standard parts,
fuelled the quest for a new destination,
namely the next horizon
to answering the most difficult questions
in modern computer science.
That new horizon is to invent
the quantum computer
and, most importantly,
to use the technology
to address the toughest questions
in science.
That new technological horizon
resides within the realm of
computer science fiction
and is still beyond our understanding.

I worked alone because
my world's fastest computing
that was enabled
by the world's slowest processors
was ridiculed—by the likes of Steve Jobs—

and dismissed as a noble but distant dream.
My discovery
of the world's fastest computing
was at first theorized and, therefore,
was expected. Yet,
it was an otherworldly new knowledge.
The world's fastest computing
was my 1989 holiday gift to the U.S.
for its Independence Day
of the 4th of July
that's Nigeria's equivalent of October 1.

A scientist achieves immortality
by first discovering something
that will be forever remembered.

For me, science is more than
learning science.
My science is a search for
something unknown, such as the invention
of the world's fastest computer,

as it's known today
and as it's expected to be known tomorrow.

Thank you.

I'm Philip Emeagwali.

Further Listening and Rankings

Search and listen to Philip Emeagwali in
Apple Podcasts
Google Podcasts
Spotify
Audible
YouTube

Google

contribution tocomputer development

- what is the contribution of philip emeagwali to computer development
- what is lovelace main contribution to the development of the computer
- what are mauchly and eckert main contribution to the development of the computer
- what is the eniac programmers main contribution to the development of the computer
- inventors and its contribution to the development of computer
- herman hollerith contribution to the development of computer
- charles babbage and his contribution to the development of computer
- abacus contribution to the development of computer
- discuss the contribution of blaise pascal to the development of computer
- contribution of ada lovelace to the development of computer

Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

father of the internet

philip emeagwali father of the internet
tim berners lee father of the internet
vint cerf father of the internet
dr philip emeagwali father of the internet
leonard kleinrock father of the internet
nigerian father of the internet
bob kahn father of the internet
npr father of the internet
african father of the internet
father of the internet **al gore**

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).

Supercomputing Across Emeagwali Internet

Struggles to Compute Across the Slowest Processors

How I Recovered from Rejections

10.1.1.1 Rejection in December 1980 in Washington, D.C.

Transcript of Philip Emeagwali YouTube lecture 210824 3of4 for the video posted below.

Click below to watch Philip Emeagwali on YouTube.com

https://youtu.be/e9z0oxvOV_E

Philip Emeagwali

The Reader's Digest described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's fastest computing across an Internet that's a global network of processors. *CNN* called him "A Father of the Internet." *House Beautiful* magazine ranked his invention among nine

important everyday things taken for granted. In a White House speech of August 26, 2000, then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."

Thank you. I'm Philip Emeagwali.

I'm here because
I was the first person to discover
the world's fastest computing across
the world's slowest processors.

That was the world's first supercomputer,
as it's known today.

In 1989, I was in the news
for discovering that
the world's slowest processors
could be used
to solve the most compute-intensive
problems arising in mathematics, physics,
and computer science.
And find their answers at the fastest

speeds.
The fastest computer
is why you know the weather
before going outside.

After I won the highest award
in supercomputing,
in 1989, I had the seal of approval
equivalent to winning the Oscar
for acting
or winning the Grammy Award
for singing
or winning a Grand Slam tournament
of tennis.
The highest award in supercomputing
that computer scientists rank
as the Nobel Prize of Supercomputing
is a peer honor awarded
by supercomputer scientists
and awarded
at the top supercomputer conference
and awarded only to someone

who made a measurable contribution
to supercomputing, that includes
a quantified and new milestone
in computer history.

After the news headlines
from my winning that prize,
supercomputer scientists
who mocked and made fun of me
took notes when I gave lectures.
But in the early 1980s, nobody took notes
when I lectured at gatherings
of research scientists.

I was fired as a scientific researcher
in December 1980 because I was
advocating changing research directions.
I was dismissed because
I wanted to change from
small-scale fluid dynamics modeling
within one processor
to large-scale modeling across

a new Internet
that's a new global network of
65,536 off-the-shelf processors and
standard parts.

My contributions to computer science
were these:

I discovered how to harness
a billion coupled processors
that shared nothing.
And how to use them
to execute time-dependent,
three-dimensional fluid dynamics
calculations
that have extreme-scale algebra
at their computational cores.
An example is simulating the spread
of contagious viruses
inside Japan's Tokyo subway
where 3.1 billion passengers a year
are packed like sardines.

10.1.1.2 Rejection in 1974 in Oregon

My signature invention
is the world's fastest computing across
the world's slowest processors.
And it's use to solve
the most difficult problems
arising in science, engineering,
medicine.
My new technological knowledge
has been absorbed
into the fastest computers in the world.
I invented it as the vital technology
that will underpin every supercomputer.
In the summer of 1974, my vague idea
of sixty-four thousand computers
around the Earth was inspired
by a science-fiction story
that was dated February 1, 1922.
My theory of fastest computing

was mocked and dismissed as a joke.

What makes a computing milestone?

A computing milestone
begins with a vision of a quantum leap
in the speed of the world's fastest
computer.
In practice, it takes a decade, or more,
to invent a new supercomputer.

10.1.1.3 Rejection in November 1982 by the U.S. government

In November 1982
and at a science conference
that took place near The White House,
in Washington, D.C.,
I gave a research presentation
on how, in theory, I could chop up
an initial-boundary value problem
that's the most compute-intensive

in mathematical physics.
And chop it up into 65,536
less compute-intensive problems.
And then solve them in tandem
and across a new Internet
that's a new global network of
sixty-four binary thousand processors.
Only one young computational physicist
remained to listen to my lecture.
Even though he didn't understand
my theory of the fastest computing
across the slowest processors,
his intuition told him that
the new technology was bigger than us.
Convinced, he spearheaded an initiative
to invite me to speak in Bay Saint Louis,
Mississippi.

10.1.1.4 Rejection in May 1983 by the U.S. Government

Six months later, I gave a hiring lecture

in Bay Saint Louis, Mississippi.
My lecture was on how to
parallel process and solve in tandem
the most extreme-scale
initial-boundary value problems
in computational fluid dynamics.
That lecture
went over their heads, in part, because
in May 1983 nobody understood
how to parallel process.
And do so across a new Internet
that's a new global network of
sixty-four binary thousand processors.
That I wasn't hired was because
recording the world's fastest speed
in computing and doing so across
the slowest processors
was then in the realm of science fiction.
Parallel computing was considered to be
an enormous waste of their time.
It was also rejected because
I was Black and sub-Saharan African.

In the 1980s, I was the only person
that could give a lecture
on how to harness a million processors.
And use them in tandem
to forecast tomorrow's weather.
In 1989, I was in the news
for discovering that
the slowest processors
could be used
to solve the biggest problems.

Rejection in September 1983 in Washington, D.C.

My world's fastest computing
of July 4, 1989,
in Los Alamos, New Mexico, USA,
was theorized in June 1974,
in Corvallis, Oregon, USA.
I continuously developed it
during the fifteen years up to 1989.

Back from September 1, 1981,
through August 1986,
I lived a 15-minute stroll
from the Gramax Heliport Building
in Silver Spring, Maryland.
The Gramax Building
was the then headquarters
of the U.S. National Weather Service.
On my typical weekdays of the early 1980s,
I arrived at eight o'clock in the morning
at my desk in the Gramax Building
at 8060 13th Street, Silver Spring,
Maryland. In the 1980s,
the Gramax Building housed
the U.S. National Weather Service.
During those five years,
and from Mondays through Fridays,
I stopped each morning
and spent five hours
with research hydrologists
and meteorologists.

As a research meteorologist,
and from 1981 to 86,
I spent the first half of each day
in the headquarters
of the U.S. National Weather Service.
I mathematically analyzed
finite difference algorithms
and processor-to-processor emailing
across
an ensemble of 65,536 processors.
Finite difference schemes
must be used to discretize and solve
the set of primitive equations
that governs atmospheric dynamics,
namely rain, wind, floods, and hurricanes.
The primitive equations, which encode
a set of laws of physics,
were first formulated in 1904.

Eight and half decades later,
I was in the news for discovering

how to solve
initial-boundary value problems
that are governed by a system of
partial differential equations, such as
the primitive equations
used to forecast the weather.
The supercomputing breakthrough
was not that I discovered
how to forecast the weather
on the world's fastest processor *per se*.
The technological breakthrough
was that I discovered
the world's fastest computing across
the slowest 65,536 processors
in the world.

The pre-cursor
to my world's fastest computing,
of July 4, 1989, in Los Alamos, New Mexico,
was rejected in September 1983,
in Washington, D.C.

and by the U.S. National Weather Service,
in Silver Spring, Maryland.

A decade earlier, I left Nigeria
for Oregon, USA,
and arrived on March 24, 1974.
In that decade, the most brilliant Nigerians
in the U.S. were denied jobs
as research engineers and scientists.
And they were denied opportunities
to contribute to scientific knowledge.
In the early 1970s,
well compensated research jobs
in the field of computer science
were reserved for white males.
When I gave a job hiring lecture
in Ann Arbor, Michigan,
on about September 24, 1985,
it seemed surreal to the white audience
listening to my theory of how to harness
the 65,536 slowest processors
in the world.

And using them to record
my world's fastest computing
that later occurred on July 4, 1989.
My audience in Ann Arbor, Michigan,
experienced cognitive dissonance.
They've never listened to
a Black research mathematician
who came to them
with new computational mathematics
from
his forthcoming world's fastest computing.

Nigerian mathematicians who can invent
new partial differential equations
for modeling the spread of the coronavirus
left mathematics, where they are no jobs,
to become nurses.
As a result of this internal brain drain,
from research mathematics
to nursing practice,
Nigerians became underrepresented
in winning top scientific prizes

but are overrepresented
as the hardest working nurses in America.
In the U.S., one in twenty registered nurses
were born in Nigeria.
My four sisters
are Nigerian-American nurses
who work two jobs each
to pay the school fees
for distant relatives in Nigeria.

Fifty years ago or in the 1970s,
the most brilliant Nigerian scientists
in the USA became janitors,
like I was in Oregon.
Some become security guards
in Washington, D.C.
or taxi drivers in New York City.
In the 1970s and 80s,
many Nigerian taxi-drivers
in the big American cities,
who were brilliant engineers and
scientists,

were robbed and killed.

I began supercomputing on June 20, 1974,
in Corvallis, Oregon. In 1974 and in the U.S.,
no Black computer scientist
had ever been hired
in any predominately white
academic institution in North America.
Seven years later, I worked without pay,
for five years,
and conducted supercomputing research
at the headquarters
of the U.S. National Weather Service
in Silver Spring, Maryland.
My supercomputer discovery,
that was not paid for,
increased the accuracy
of weather forecasts now produced
by the National Weather Service.

As the only person that was not paid,
I was the only research meteorologist

that had the complete freedom
to pursue unorthodox lines of enquiries
that led to my scientific breakthrough.
In contrast, salaried research meteorologists
were explicitly told what to do.
And were forbidden from conducting
the parallel supercomputing research
that I had the freedom to explore.
Also, because I was not paid,
I retained the legal rights
to all my inventions.

I'm a Black mathematician
that occupies a white space.
Mathematics itself is race neutral.
But white mathematicians
were not race neutral.
The nine Philip Emeagwali equations
were correct and accurate.
For years, many white mathematicians
were slow in accepting my properly

derived mathematical equations.
The Philip Emeagwali equations
were accepted only after
I disguised my racial identity
and used those equations
to win the highest award
in supercomputing.

Parallel processing, as a subject,
did not exist on June 20, 1974,
the day I began supercomputing,
in Corvallis, Oregon. In September 1983,
I submitted a research report
on an early version of my theorized
world's fastest computing across
a million processors.
My seventy-five dollar non-refundable
submission fee was accepted,
but my technical report
on the world's fastest computing
was rejected.
That rejection of the precursor

to my 1,057-page research report
on the world's fastest computing
that I recorded on July 4, 1989,
in Los Alamos, New Mexico,
was repeated six times.
Their six rejections of my discovery
of the world's fastest computing stopped
after my 40-page summary
of that 1,057-page report
won the highest award in supercomputing.
And won it because I discovered
that the world's fastest computer
can be built from the
world's slowest processors.
In 1989, I was in the news
because I was the first person
to prove that a supercomputer
that is powered by up to
one billion processors
can be used to more accurately
pinpoint the locations
of crude oil and natural gas deposits

that were buried up to 7.7 miles
(or 12.4 kilometers) deep.
And buried across
the 65,000 producing oil fields
around the world.

Rejection of Parallel Processing in Ann Arbor, Michigan, September 24, 1985

Parallel processing—or solving
up to one billion problems at once—
is the breakthrough invention
used to make the computer faster
and the supercomputer fastest.
My timeline with
parallel supercomputing
parallels the development of a new,
high-performance computer science.
At the time of my November 1982 lecture,
in Washington, D.C., on how I could solve
the most compute-intensive problems
that arise as geophysical fluid dynamics

initial-boundary value problems,
little was known
about the world's fastest computing across
the world's slowest processors.
So the then unfamiliar technology
for parallel supercomputing
was widely ridiculed
as existing only in the realm of
science fiction.
In the early 1980s, what was known about
parallel supercomputing
rested in the minds of the first
parallel programmers.

I was the first full-time
supercomputer scientist
in the world.

That accomplishment explains why
most of the transcribed lectures
on supercomputing
that were posted on YouTube

were delivered by Philip Emeagwali.
It's been noted that I posted
more transcribed
scientific research lectures
on YouTube
than any person or institution
ever did.
On about September 24, 1985,
I gave a hiring lecture
on the fastest computing across
the slowest processors.
And gave that lecture
at the research laboratory
of the federal agency,
called the U.S. National Oceanic
and Atmospheric Administration.
That research laboratory
was in Ann Arbor, Michigan.
My supercomputing lecture
to those research oceanographers
was abstract because
I lectured on the most advanced calculus,

called partial differential equations.
And lectured
on the most compute-intensive algebra,
called finite difference equations.

Furthermore, I used then
unfamiliar and complicated
supercomputer technology,
that's now known as fastest computing
across a million processors.
In 1985, parallel processing
existed only as a computer science theory.
Parallel processing did not power
fastest computers, until I discovered it
on July 4, 1989.

My contribution to computer science
is this:

I discovered how up to a million
processors
could be harnessed in tandem.

And used to forecast the weather,
as well as solve
the hardest problems.
Before my discovery, that new knowledge
only existed in the realm of science fiction.

My contribution to mathematics
was to turn that fiction to nonfiction.
In my hiring lecture of about
September 24, 1985, in Ann Arbor,
Michigan, I was tasked to detail
how I could predict
the fluctuations of water levels
across the Great Lakes of North America.
I explained
how to parallel process a seiche,
the name for a standing wave
that oscillates or sways back and forth
and flows within an enclosed,
or a partially enclosed,
or a landlocked body of water.

The pre-cursor
to my world's fastest computing,
of July 4, 1989, in Los Alamos, New Mexico,
was rejected in September 1981
by the U.S. National Weather Service,
then at the Gramax Building
in Silver Spring, Maryland.
It was again rejected in September 1983,
in Washington, D.C.
Finally, it was rejected in Ann Arbor,
Michigan, on about September 24, 1985.

In the 1980s, the academic scientists
in Ann Arbor, Michigan,
who were all narrowly-
and shallowly-trained,
only understood fluid dynamics
or partial differential equations
and dismissed
my world's fastest computing
across world's slowest processors

as a science fiction.
My explanations of emailing across
millions of processors
was science fiction
to the scientists in Ann Arbor, Michigan.
Those scientists were very narrow minded
and arrogant.
They could not give ten percent
of the lectures
that I shared as podcasts
and YouTube videos,
but pretend they could do so.
The scientists in Ann Arbor, Michigan,
were negatively affected
by their insularity and group thinking.
As was then written in several Ann Arbor
publications, I worked alone
and beyond the frontier of knowledge.
The Michigan Today, is mailed to 610,000
college-educated people around the world.
It's published, four times a year,
in Ann Arbor, Michigan,

and archival copies are posted online.
The February 1991 issue
of *The Michigan Today*
that can be read online
was a special issue on the contributions
of Philip Emeagwali
to the development of the supercomputer.
I was featured alone
in *The Michigan Today* because
my research
on the world's fastest computing
was over the heads
of academic scientists in Ann Arbor,
Michigan, who at that time
had never seen
the world's fastest computer,
as it's known today.
It was supercomputer scientists
outside Michigan
that explained to academic scientists
in Ann Arbor
that I've discovered

the world's fastest computing.
Therefore, it should not come as a surprise
that both the governor of Michigan
and the Michigan House of
Representatives,
that seat 65 miles away in Lansing,
first congratulated me
for my world's fastest computing.
And sent their congratulations
before the academic engineers
in Ann Arbor could do so.
The reason was that my discovery
was abstract.
The U.S. government called it
a grand challenge problem
for a good reason.
My solution
of the grand challenge problem
was beyond the reach
of any academic scientist of the 1980s.
As my one thousand podcasts
and YouTube videos prove,

I was the only person
that could deliver a complete series
of scientific lectures
on how to solve
the grand challenge problems.
To put my scientific research
in a different perspective,
Isaac Newton's Laws of Motion
were defined in three-dimensional
everyday space
that an automobile engineer
in Ann Arbor, Michigan, could grasp.
In practice, engineers don't think
in four dimensions.
For instance, Albert Einstein's
Theory of Relativity
has never been mentioned
in any meaningful conversation
at any engineering conference.
The engineer finds it difficult
to think in the abstract

four-dimensional space-time continuum
of the Theory of Relativity.
I took mathematical thinking
to a higher level
and explained my world's fastest
computing
in sixteen-dimensions.

My world record speed
was magic and science fiction
to every engineering academic
in Ann Arbor, Michigan.
Scientists reject new paradigms
that they cannot understand.

Besides my research, Ann Arbor, Michigan,
was never strong in supercomputing
and never pushed
the frontiers of knowledge
in computer science.
On July 4, 1989, I executed
my world's fastest computing

on a machine
that was in Los Alamos, New Mexico,
not in Ann Arbor, Michigan,
as was widely presumed.
Since the late-1940s, Los Alamos
was the world's headquarters
for supercomputing.
It's more than a coincidence
that I discovered
the world's fastest computing
in Los Alamos.

Ann Arbor, Michigan, was where my son
was born,
not where my discovery was born.

But for personal reasons, Michigan
remains a crucial place in my life story.
And an integral part of my legacy.
I had a global view of science
that went beyond Michigan.

Ann Arbor is a mere dot
on the map of the world.
And my contribution was not to Ann Arbor,
Michigan, but to science.
And to the millions of students
around the world
writing school essays
on Philip Emeagwali.

I know who my boss is.
My boss is the twelve-year-old student
in sub-Saharan Africa.
And my duty is to inspire her
with my life stories
and do so in forthcoming centuries
and millennia, just like Euclid, Galileo,
and Newton did to me
when I was a twelve-year-old African.

The difference between other scientists
and I is this:

The computer of the academic scientist
sits on his desktop.
And it costs a thousand dollars.
The world's fastest computer
is not an academic toy.
It occupies the footprint of a football field.
And it costs forty percent more than
the mile-long Second Niger Bridge
of Nigeria.
The desktop computer
is just a drop in the bucket
called the supercomputer.
In 1989, I was the sole full-time
programmer
of sixteen supercomputers,
as they're known today.
Unlike the academic computer scientist
that learned supercomputing
from his textbook, I had to know
the explicit inner workings
of all the 65,536 processors
that shared nothing.

And that I programmed alone.
As a mathematician, I was cognizant
of the fact that
the analytical solutions
for my initial-boundary value problem
governed by
the Philip Emeagwali equations
were nonexistent.

My contribution to mathematics is this:

I discovered that
all initial-boundary value problems
are tractable across an ensemble
of up to a billion processors
that shared nothing.
My supercomputing discovery
is the only way to solve
grand challenge problems, such as
simulating the spread of COVID-19 across
the one million daily patrons

of Onitsha market.

White Supremacists in Michigan

What is Philip Emeagwali famous for?

In 1989, I was in the news because
I programmed the first supercomputer,
as it's known today.
I programmed sixty-four binary thousand
off-the-shelf processors
that outlined and defined
a never-before-seen Internet
that's also a never-before-seen
supercomputer, *de facto*.

Racism swirled around me
everywhere I went.
The personal attacks were cloaked
in race-neutral language.
But the hostility arose because, in 1989,
a 35-year-old Black mathematician

was making the news headlines
for discovering
the world's fastest computing across
the world's slowest processors.
My lectures are not secret
as was wrongly alleged.
My lectures were spread across
one thousand podcasts
and YouTube videos.
Many that listened to
or watched my lectures, in their entirely,
favorably compared them
to those of Albert Einstein
and the greatest scientists
of the second half of the 20th century.

When I was coming of age, in the 1980s,
I was often disinvited
from giving the pre-cursors
to the lectures that I posted on YouTube.
I was disinvited not because
the world's fastest computing

was not understood
to be a critical technology.
It was well accepted that
the world's fastest computing
is the most important topic
in mathematics, physics,
and computer science.
I was disinvited because
my lectures and physical presence
in predominately white academic settings
quietly stirred up uncomfortable questions
about race and intelligence.
Because I was Black and African
and compared to Albert Einstein in IQ,
I was deplatformed.
I was stopped from delivering lectures
at any of the five thousand predominately
white institutions in the U.S.

The double standard was that
Albert Einstein was not disinvited
when he spoke at the all-Black

Lincoln University of Pennsylvania,
back on May 3, 1946.
Lincoln University is the alma mater
of the poet Langston Hughes,
first president of Nigeria, Nnamdi Azikiwe,
first president of Ghana,
Kwame Nkrumah,
and the first U.S. Supreme Court justice,
Thurgood Marshall.

In 1946, lynching, race riots,
and segregation were ways of American
life. And the white press, biographers,
and archivists
ignored Albert Einstein's lecture
at the all-Black institution.

As an aside, I wasn't the only Black
computer scientist
that was deplatformed
across the five thousand
predominately white institutions

in the U.S. In the 1980s, a survey showed that only three Black computer scientists were allowed to teach the subject across those five thousand institutions
in North America.

I began supercomputing
on June 20, 1974, in Corvallis, Oregon, USA.
In the 1972 film "Fist of Fury,"
Chinese martial artist Bruce Lee
felt slighted by the sign

"No Dogs and Chinese Allowed."

Years earlier, Blacks and Chinese
were not allowed to enter
science buildings in Michigan.
In Ann Arbor, Michigan, racism
was deeply institutionalized.

Chien-Shiung Wu, a Chinese physicist,
was the unsung heroine of physics.

Wu was associated
with the Manhattan Project
of the Second World War.
That project yielded
the first nuclear weapon.
In 1957, the Nobel Prize in physics
was denied from Chien-Shiung Wu.
That injustice
became a controversial decision
and attracted
public attention and sympathy
for Chien-Shiung Wu.
Her two male co-workers, Chen Ning Yang
and Tsung-Dao Lee,
received the Nobel Prize
for the discovery
that Chien-Shiung Wu made.
Wu is remembered
as the first lady of physics.

I'm forty-two years younger than Wu.
And we became *cause célèbres*

in experimental and computational physics,
respectively.
As a Black physicist,
the rejections that I experienced
in Ann Arbor, Michigan,
were similar to those that
made Wu to decline
the offer to come to Ann Arbor.
In July 1985 and after a nation-wide search,
I was ranked as the top
supercomputer scientist
that could be invited
to live and work in Ann Arbor, Michigan.
On about September 24, 1985,
I gave my job hiring lecture, in Ann Arbor.
My scientific lectures of the 1980s
were the pre-cursors
to my one thousand podcasts
and YouTube videos.
The research scientists in Ann Arbor,
Michigan, were impressed
with my command of materials.

But they also wore a worried look
on their faces.
It was obvious they didn't expect me
to be Black and African.
Two days after my hiring lecture,
I was told over the phone
that the job position
for a supercomputer scientist, in Ann
Arbor,
has been cancelled.

Through word-of-mouth, some scientists
who did not invite me to Ann Arbor,
and did not even attend my hiring lecture,
learned that I was trying to invent
the world's fastest computing.
And do so across
the world's slowest processors.
Those scientists became intrigued
and courted me for two years.
They wanted me to come back
and complete my world's fastest computing

in Ann Arbor, Michigan.
For two years, I hesitated and pondered
on the deeply institutionalized racism
in Ann Arbor.
That was the reason,
I declined the first offer
that was made on about
September 25, 1985,
to come to Ann Arbor, Michigan,
to continue my research
on the world's fastest computing.
The measure of the difference
between my knowledge
and that of scientists
in Ann Arbor, Michigan, is this:

I posted one thousand podcasts
and YouTube videos,
each on my contributions
to the world's fastest computing.
To this day, no scientist from Michigan
could post one such video.

The first lady of physics, Chien-Shiung Wu,
declined to study in Ann Arbor, Michigan.
Her reason was that she was not allowed
to use the front entrance
to enter the physics building, in Ann Arbor, Michigan.
In effect, I could not use the front entrance
to enter the supercomputer building
in Ann Arbor, Michigan.
From 1987 to 89, I filed complaints
that I was not allowed to use
the supercomputer in Ann Arbor,
which was equivalent to been banned
from using the front entrance
to enter the supercomputer building
in Ann Arbor, Michigan.

At that time, I was acknowledged
to be the foremost supercomputer scientist
in the state of Michigan.
And by federal law, I should be allowed

to use that supercomputer
which was funded by U.S. taxpayers.

To prove my point, I can produce copies
of a confidential memo,
sent from a top official in Ann Arbor,
Michigan, to his secretary,
named "Pam Derry."
Pam was instructed by her boss
to hide my application
to join their research group
in scientific computing.

In a May 3, 1946, lecture
to an all-Black audience,
Albert Einstein lambasted
white supremacy as a quote, unquote

"a disease of white people."

Einstein then added,

"I do not intend to be quiet about it."

To put their racial discrimination
in perspective, in the 1980s,
faraway supercomputer administrators
did not know that I was Black and African.
And I was not discriminated against.
I was allowed to use
sixteen supercomputers
across the USA.
I began programming supercomputers
at age nineteen
in Corvallis, Oregon, USA.
Yet, at age thirty-five,
I was not allowed to program
the supercomputer
in Ann Arbor, Michigan, even though
I was then the world's most renowned
supercomputer programmer,
and remains so.
As a mathematician

in search for new mathematics
and as a large-scale
computational physicist
in search for new physics,
the world's fastest computer
is my lifeblood.

Even though I was forced
to leave the state of Michigan
to conduct my supercomputer research,
I was still recognized as the top scientist
in Michigan.
Both the Governor of Michigan
and the Michigan House of Representatives
acknowledged my contributions
to science and Michigan.

Thank you.

I'm Philip Emeagwali.

Further Listening and Rankings

Search and listen to Philip Emeagwali in

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contribution tocomputer development

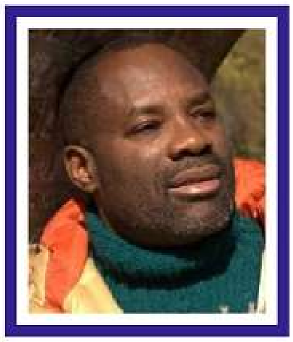
- **what is the** contribution **of philip emeagwali to computer** development
- **what is lovelace main** contribution **to the** development **of the computer**
- **what are mauchly and eckert main** contribution **to the** development **of the computer**
- **what is the eniac programmers main** contribution **to the** development **of the computer**
- **inventors and its** contribution **to the** development **of computer**
- **herman hollerith** contribution **to the** development **of computer**
- **charles babbage and his** contribution **to the** development **of computer**
- **abacus** contribution **to the** development **of computer**
- **discuss the** contribution **of blaise pascal to the** development **of computer**
- contribution **of ada lovelace to the** development **of computer**

Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

father of the internet

philip emeagwali father of the internet
tim berners lee father of the internet
vint cerf father of the internet
dr philip emeagwali father of the internet
leonard kleinrock father of the internet
nigerian father of the internet
bob kahn father of the internet
npr father of the internet
african father of the internet
father of the internet **al gore**

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).



Supercomputing Across Emeagwali Internet

Transcript of Philip Emeagwali YouTube lecture 210824 4of4 for the video posted below.

Click below to watch Philip Emeagwali on YouTube.com

https://youtu.be/e9z0oxvOV_E

Philip Emeagwali

The Reader's Digest described Philip Emeagwali as "smarter than Albert Einstein." Philip Emeagwali is often ranked as the world's greatest living genius and scientist. He is listed in the top 20 greatest minds that ever lived. That list includes Charles Darwin, Isaac Newton, William Shakespeare, Leonardo da Vinci, Aristotle, Pythagoras, and Confucius. Philip Emeagwali is studied in schools as a living historical figure.

In 1989, Philip Emeagwali rose to fame when he won a recognition described as the Nobel Prize of Supercomputing and made the news headlines for his invention of the first world's fastest computing across an Internet that's a global network of processors. *CNN* called him "A Father of the Internet." *House Beautiful* magazine ranked his invention among nine important everyday things taken for granted. In a White House speech of August 26, 2000,

then U.S. President Bill Clinton described Philip Emeagwali as "one of the great minds of the Information Age."

How Are Supercomputers Used?

10.1.1.1 How to Save Half a Million Lives During the 1970 Bhola Cyclone of Bangladesh

How are supercomputers used?

To be specific, how could
large-scale computational physicists
have used
the world's fastest computer
to save the half a million lives
that were lost
during the 1970 Bhola cyclone
of Bangladesh?

We are vulnerable
to the uncontrollable forces of nature.
We can't shield ourselves

from nature's destructive effects.
But we can forecast the occurrences
of storm surges, typhoons,
and hurricanes.
In my fastest computing lecture
of about September 24, 1985,
I also explained
how to parallel process storm surges,
typhoons, and hurricanes.
And how to simulate such phenomena
at the highest, parallel-processed
supercomputer resolutions.
And do so to forecast the dangerous rise
in water levels
that will occur during tropical cyclones
and occur when strong winds
push water onto coastal communities.
On November 3, 1970, and in East Pakistan
(now renamed "Bangladesh")
and in India's West Bengal,
half a million people died
during the Bhola cyclone.

That tropical cyclone produced
a 33-feet high storm surge.

10.1.1.2 How to Save 229,000 Lives During Typhoon Nina

The fastest computers are used
to foresee earthquakes, typhoons,
tsunamis,
and flooding arising from
sudden torrential rainfalls.
Typhoon Nina appeared on July 30, 1975.
The flooding triggered
by the collapse of the Banqiao
Reservoir Dam
in China caused the collapse of
smaller downstream dams.
Two hundred and twenty-nine thousand
(229,000) people died
during Typhoon Nina.
In 1979
and at the Foggy Bottom neighborhood

of Washington, D.C.,
I conducted physics research
on how to use the fastest computers
to forecast the wave heights and speeds
of propagated flood waves
that arise from dam breaks.
An example is the flood wave
from the collapse
of the Banqiao Reservoir Dam
of China.
After my discovery
of the fastest computing across
an ensemble of a billion
coupled processors,
China used my new knowledge
to develop a supercomputer
powered by 10.65 million
off-the-shelf processors
and ranked as the world's fastest.
The new supercomputer could be used
to hindcast, or re-forecast, Typhoon Nina.
And used to hindcast the collapse

of the Banqiao Reservoir Dam
of China.
Such supercomputer models
are used to determine
when to evacuate residents
that live within the flood plain
that's downstream
of the Banqiao Reservoir Dam
of China.
If Chinese residents of the flood plain
downstream of the
Banqiao Reservoir Dam
were evacuated on July 30, 1975,
some of the two hundred
and twenty-nine thousand (229,000) lives
lost
could have been saved.

10.1.1.3 How to Avoid the Wreck of the Edmund Fitzgerald

My scientific discovery
which occurred on July 4, 1989
was this:

the slowest processors in the world
could be harnessed
and used to solve
the most compute-intensive problems
in the world
and solve them at the fastest possible speeds
in the world.

That discovery is the major achievement
of my scientific career.
That discovery made me
the subject of school essays on
"computer inventors and their inventions."

My contribution to computer science
is the reason I'm listed
on the same top ten lists

with Isaac Newton, Charles Darwin,
and Albert Einstein.

I discovered that
parallel supercomputing is a tool
that can reduce
meteorological forecast errors,
like the error that resulted
in the shipwreck
of the SS Edmund Fitzgerald.
That shipwreck occurred
on November 10, 1975.
I remember where I was
when the SS Edmund Fitzgerald
shipwrecked. I was living at
2540 SW Whiteside Drive,
Corvallis, Oregon,
which was the residence of
Fred and Anne Merryfield.
Fred Merryfield was a British fighter pilot
who was shot down
during the first world war.

Fred Merryfield co-founded
one of the largest engineering firms
in the USA, named CH2M.
That shipwreck
was the subject of a 1976 hit ballad
by Gordon Lightfoot. It was titled:

"The Wreck of the Edmund Fitzgerald."

In 1975, meteorological forecasts
were executed on supercomputers
powered by one processor and, hence,
weren't as accurate
as the high-resolution, parallel-processed
forecasts of today powered by
up to 10.65 million processors.
In 1975, supercomputing
as it's known today
only existed as science fiction.
And the fastest computers
used by the U.S. National Weather Service
weren't fast enough.

Those supercomputers
failed to solve the governing system of
partial differential equations
that were used to predict
the gale-force winds,
the steep wave heights,
and the treacherous conditions across
Lake Superior, which is the largest
of the Great Lakes.
Lake Superior had a surface area of
82,100 square kilometers
(or 17 times
the size of Anambra State
of Nigeria).
Lake Superior
has a maximum depth of 1,332 feet
[or 0.4 kilometers]
which makes it thirteen times deeper than
the River Niger at Timbuktu, Mali.
Lake Superior has a volume of
12,100 cubic kilometers.
That's five million times

the volume of The Great Pyramid of Giza
that's ranked as one of the seven wonders
of the world. Lake Superior
can sustain water waves
that are the heights of
a four-story house.
My lecture of about September 24, 1985,
in Ann Arbor, Michigan,
was on how to parallel process
water movements,
water temperature profiles,
and ice dynamics.
And do so within the Great Lakes
of North America. The Great Lakes
are five interconnected freshwater lakes
that included Lakes Superior, Huron,
Michigan, Ontario, and Erie.
And that account for one-fifth
of the freshwater on Earth.
The Great Lakes span 750 miles
[or 1,207 kilometers]
and 95,160 square miles,

or a little more than one-quarter
the size of Nigeria.
The Great Lakes
are on the U.S. and Canadian borders
and are dotted with 35,000 islands.

Leapfrogging Across the Philip Emeagwali Internet

Government Labs Didn't Hire Black Scientists

10.1.1.4 Black Geniuses in All-White Spaces

When I began supercomputing,
in 1974, it was nearly impossible
for a Black computer scientist
to be hired in a federal research
laboratory.

In the U.S., Black geniuses
were treated as trespassers
in nearly all-white scientific spaces.
In the mid-1980s, I had job offers
at the entry scientific
and engineering levels.
But I rejected those jobs because
I was grossly overqualified for each.
Asking I, the sole programmer
of sixteen supercomputers,
to become an ordinary computer scientist
was like asking an acrobatic jet fighter
pilot that's broken world records
to become an "*okada*" motorcycle rider.
Even though I was shamefully overqualified
for the engineering position
that I held in Casper, Wyoming,
I was denied a promotion.
Instead, a far less qualified white male
was offered the promotion
that I was denied.
At the same time,

I was offered several promotions
but that was because
those making the hiring decisions
did not know that I was Black
and African.

In my hiring lecture
of about September 24, 1985,
in Ann Arbor, Michigan,
I theorized how to chop up
The Great Lakes
into 65,536 smaller lakes
each represented
as an initial-boundary value
mathematical problem
that I must message-pass
and send and receive
and do so with a one-problem
to one-processor correspondence.
My fastest computing theory
was abstract and went over the heads
of the research scientists

in Ann Arbor, Michigan.

I wasn't hired.

The forces that brought me from
College Park, Maryland, to Ann Arbor,
Michigan, began in July 1985,
and when I received a telephone call
from a research biologist
who worked at the Great Lakes
Environmental Research Laboratory,
in Ann Arbor, Michigan.
That lab was operated
by the U.S. National Oceanic
and Atmospheric Administration.
I received that telephone inquiry
in my office within the Gramax Building
of the U.S. National Weather Service.
The National Weather Service
is an agency operated
by the U.S. National Oceanic

and Atmospheric Administration.

In the early 1980s, the most brilliant
Black mathematicians
weren't employed
to conduct scientific research
in U.S. government laboratories.
In the U.S. of the early 1980s,
the most brilliant mathematicians
of sub-Saharan African descent
weren't welcomed to teach students
of European descent.
And do so in any of its five thousand
institutions of higher learning.
I invented new mathematics
that made the news headlines,
discovered new physics
that opened the door
to large-scale computational
fluid dynamics,
and discovered new computer science
that earned me

what computer scientists referred to
as the equivalent
of the Nobel Prize of Supercomputing,
for 1989, but, yet, I couldn't teach
the world's fastest computing
to a classroom of young Americans.

In 1985 and in Ann Arbor, Michigan,
it was preferable to hire
an obscure white person
to teach the slowest computing
than to hire a famous Black
supercomputer scientist
to teach the world's fastest computing.

The one thousand podcasts
and closed-captioned videos
that I posted on YouTube represent
what I could have taught
in American classrooms.
In the 1970s and 80s,
the decades I came of age,

I couldn't name one Black scientist
then teaching mathematics
or physics or computer science
at any predominantly white institutions
in the USA.
For those reasons, research scientists
who attended my hiring lecture
of about September 24, 1985
in Ann Arbor, Michigan,
were shocked when they discovered
that I was Black
and sub-Saharan African.
I was the foremost
supercomputer scientist
they could invite to Ann Arbor.
My 1985 lecture
that took place at the Great Lakes
Environmental Research Laboratory,
Ann Arbor, Michigan,
was on how I will, for the first time
in the history of computer science
send and receive portions

of my lake circulation models.
And do so via emails
to my sixteen-bit-long addresses
of my two-raised-to-power-sixteen,
or sixty-four binary thousand,
initial-boundary value problems.
And how to send them to and from
65,536 off-the-shelf processors and
standard parts.
Once again, the new knowledge
of how I executed
the fastest computer speed on Earth
and did so while solving
the most compute-intensive problems
and did so across
the slowest processors
was not in computer science textbooks
of the 1980s.
In the 1980s, parallel supercomputing
existed only in the realm
of science fiction
and my quest was to figure out

how to turn that
science fiction into nonfiction.
The research scientists in Ann Arbor,
Michigan, and elsewhere,
didn't understand my lecture
on the world's fastest computing.
But at a visceral level
they understood
that I had a flawless command
of materials.
And that I was at the frontiers
of scientific and technological knowledge
and at the crossroad
where new mathematics, new physics,
and the world's fastest computing
intersected
After my hiring lecture
of about September 24, 1985,
some research scientists
in Ann Arbor, Michigan,
and elsewhere, sensed that
fastest computing across

one billion processors,
instead of computing
within one processor,
will be paradigm shifting
and should change the way
we look at both the computer
and the supercomputer.
iv

10.1.1.5 Leapfrogging Across the Philip Emeagwali Internet

During a White House speech
that was delivered on August 26, 2000,
then U.S. President Bill Clinton
referred to the
Philip Emeagwali formula.
My formula enables the
world's fastest computing across
the world's slowest processors.

I possessed my unmistakably unique
supercomputing vision, namely

solving the most difficult problems across
the Philip Emeagwali Internet
that's a new global network
of up to a billion equidistant processors
that shared nothing.

My theorized vision
was to harness a new Internet
that was a new global network
of the slowest
two-raised-to-sixteen processors
in the world.
I visualized my sixty-four
binary thousand processors
as braided together
and as uniformly distributed
around a hypersphere
that I also visualized
as embedded within
a sixteen-dimensional hyperspace.
I visualized my 65,536 processors
as braided together by sixteen times

two-raised-to-power sixteen
short and regular email wires.
My research goal was to use
my new Internet to discover
the fastest speed in supercomputing.
And to invent the first supercomputer,
as it's known today,
from the bowels
of a vast ensemble
of the slowest processors in the world.
My supercomputer quest—that began on
June 20, 1974, in Corvallis, Oregon, USA,
and ended on July 4, 1989,
in Los Alamos, New Mexico, USA—was
to find the extraordinary
among the ordinary.
And do so by emulating
the fastest processor in the world
that I emulated by integrating
the slowest processors in the world
and integrating them
to invent one seamless,

coherent supercomputer
that's not a new computer, by or in itself,
but that's a new Internet, in reality.
In 1989, I was in the news for providing the
quote, unquote "final proof"
that parallel supercomputing
is not science fiction.

I'm the only father of the Internet
that invented an Internet.

10.1.1.6 Leapfrogging from the Slowest Processor to the Fastest Supercomputer

The computer that performed
automatic computations and did so within
itself was invented
in the nineteen-forties.
That computer invention
heralded a paradigm shift,
or a change in the way we compute.

The new way we compute
paradigm shifted from mechanical
to electronic and automatic.
My quest for how to solve
the most compute-intensive problems
in supercomputing
and solve them
with the fastest computations across
the slowest processors in the world
began in the nineteen seventies
and eighties.

I was in the news because
I discovered the first fastest computing
that's powered by the slowest processing.
That's the first supercomputing,
as it's executed today.

10.1.1.7 How Are Supercomputers Used?

The world's fastest computers

have multiple industrial applications
that can be indirectly measured
by its forty-five billion dollars a year sales.

How can the supercomputer
powered by one billion processors
benefit you?

The world's fastest computer
that's powered by
the world's slowest processors
that shared nothing
was the first search engine.
That supercomputer provided answers
to natural language queries
and did so before the Internet.

The supercomputer that's powered by
one million processors
will enable us to predict
coastal storm surges.
And do so more accurately, faster, better,

and less expensively.
A coastal storm surge
is a tsunami-like phenomenon
that can arise from
low pressure weather systems.
A coastal storm surge is rising water
that can reach as high as twenty feet
and extend miles inland.
Large-scale computational hydrodynamics
is the supercomputing tool
used to forecast coastal storm surges.

Extreme-scale computational
fluid dynamics
includes the simulation of the spread
of highly contagious COVID-19 viruses
that emerge
during a once-in-a-century
global pandemic.
The world's fastest computer
is used to understand

the required social distancing
that must be enforced
inside London's Metro.
And inside American subway systems
that pack passengers like sardines.

U.S. Labs Didn't Hire Black Geniuses

10.1.1.8 Black Geniuses in All-White Spaces

I came to the largest conference
of mathematicians
to deliver an invited lecture
on my contributions to mathematics.
I delivered that lecture
at the International Congress
of Mathematicians, called ICIAM 91.
That mathematics conference
is the Olympics for mathematicians
who invented new mathematics.

My lecture on the nine Philip Emeagwali
partial differential equations
was delivered on Monday, July 8, 1991,
in Washington, D.C.
At that International Congress
of Mathematicians, I kept a tally
of the Black mathematicians that I saw.
I counted two, myself included,
out of thousands of mathematicians.

As a prominent research
computational mathematician,
I found Ann Arbor, Michigan,
to be a bastion of white supremacists.
The irony is that I alone
has more podcast lectures
and YouTube videos
than the one thousand scientists
and engineers in Ann Arbor, Michigan.
Across my one thousand YouTube lectures
on supercomputing,
it was acknowledged that

I was second to none.
But, in Ann Arbor, Michigan,
only white candidates
that could not deliver a solid hiring lecture
were hired
to program or teach supercomputing.

Since 1985, some wondered
why I experienced such deeply
institutionalized racism
in Ann Arbor, Michigan of the 1980s.
It began with my lecture
on fastest computing,
delivered on about September 24, 1985.
From that lecture, some physicists
in Ann Arbor, Michigan,
identified me as a mathematician to watch.
For four years onward of 1985,
it was in the air in Ann Arbor
that Philip Emeagwali
could record a breakthrough
in fastest computing and become famous.

For those reasons, when I returned to
my research base
in College Park (Maryland),
from late September 1985
to late April 1986,
and to Casper (Wyoming)
from late April 1986 to April 1987,
those research physicists
in Ann Arbor (Michigan)
courted me to return to Michigan.
I was begged to resign from my job
with the U.S. government
and to relocate from Casper, Wyoming,
to Ann Arbor, Michigan.

I was not invited to Ann Arbor
because I was good looking.
I came to Ann Arbor
on about September 23, 1985,
because my reputation
as the supercomputer scientist
that knew the most

about fastest computers
preceded me.
I'm the only scientist
from Ann Arbor, Michigan,
that's the subject of
school essays on inventors.
Both the Governor of Michigan
and the Michigan
House of Representatives
issued a special proclamation
in which they thanked me
for my contributions to computer science
and to Michigan.
Yet, on about September 24, 1985,
I wasn't hired to conduct the same
supercomputer research
that was publicly praised
by both the Governor of Michigan
and the President of the United States.

The reason I wasn't hired,
on about September 24, 1985,

can be better understood
from the context of the white backlash
from the race riots
that preceded my hiring lecture
of about September 24, 1985,
in Ann Arbor, Michigan.
The reason was that
I gave my hiring lecture
on fastest computing across
the slowest processors
and gave it only seventeen years
after the nearby five-day Detroit Riot
of July 23, 1967.
The Detroit Riot of Michigan
was one of the deadliest riots
in the USA.
The Detroit Riot
left forty-three persons dead.
The aftermath and consequence
of that Detroit Riot
were that the white scientific community
in the affluent suburb of Detroit,

including Ann Arbor, Michigan,
enforced an unwritten policy
of not hiring any Black mathematician
or computer scientist,
especially those that gave
the most outstanding hiring lectures
that are now posted as podcasts
and YouTube videos.

After my hiring lecture,
the supercomputer research position
that brought me to
Ann Arbor, Michigan, was canceled
and re-advertised.
The unqualified white candidate
hired is forgotten
while the qualified Black candidate
that wasn't hired
became the subject of school essays
for his contributions to computer science.

10.1.1.9 Leapfrogging from the Slowest Computer to the Fastest Supercomputer

In Michigan, I played tennis
as an antidote to solving difficult problems.
I was most productive
when I'm physically fit.
In 1989 and 1990,
I was in local newspapers
both for reaching the finals
of a citywide tennis tournament
and for winning the highest award
in supercomputing.
The July 22, 1989,
issue of the *Ann Arbor News*,
carried an article on my reaching the finals
of the Ann Arbor City Tennis Tournament.
Eighteen days earlier, or at the beginning
of the tennis tournament, I had discovered
the world's fastest computing,

as it's known today.

Even though I was one of the most knowledgeable supercomputer scientists that ever lived, I wasn't hired
for any of the 25,000
supercomputing positions in the U.S.
In the 1970s and 80s,
it was an unwritten policy
not to hire Nigerians,
or Black sub-Saharan Africans, in the USA
in high paying engineering positions.
For those reasons, over half of the taxi drivers in major metropolitan areas
were highly educated immigrants,
including Black sub-Saharan Africans
who were trained as engineers
and scientists.
In the U.S. of the 1970s and 80s,
I was only hired
via telephone interviews.

The reason was that I came across
as very knowledgeable.
And I exhibited the command of materials
that can be seen
in my one thousand podcasts
and YouTube videos.
And they couldn't overcome
their racial stereotype and imagine
that I was a Black African.
That was how I was offered
several professional jobs, including
the supercomputing position
that I was offered, but declined, in late 1986
at the Aberdeen Proving Ground,
in Aberdeen, Maryland.
My supercomputing job hiring lectures,
of the early 1980s,
were the precursors to the lectures
that I posted on my YouTube channel,
named "Emeagwali."
By 1985, research mathematicians

who attended my supercomputing lectures
declared that
I was the only supercomputer scientist
in the world
that could work alone to harness
the slowest processors in the world.
And use those processors to solve
the most compute-intensive problems
in the world.
And solve those problems
at the fastest speeds in the world.
And execute those three things
when those supercomputer experiments
were considered impossible.

10.1.1.10 Why I Created New Mathematics

I first came to Ann Arbor, Michigan,
on about September 24, 1985.
I was invited to give a job hiring lecture

on supercomputing.
During the first half of the 1980s,
I conducted supercomputing research
in College Park, Maryland.
My focus was on large-scale
computational mathematics
and its applications
to the fluid dynamics of physics.
At noon and on weekdays,
I'll take a shuttle bus
for the 25-minute ride
from Silver Spring Metro Station
to College Park, Maryland.
In College Park, I spent significant time
in the Coffee Room
for research mathematicians only.
That Coffee Room was at
forty-one seventy-six [4176]
Campus Drive.
Half of the time, I was inside
the nearby research library

that has specialized collections
in mathematics, physics,
and computer science.
Or I might be attending a research seminar
on new mathematics
that's presented by
the visiting mathematician
that invented it.
Those lectures inspired me to invent
the nine Philip Emeagwali equations.
I spent my day and night
in College Park, Maryland,
and Silver Spring, Maryland, respectively.
And I was conducting research
in the then unknown world
of the hoped-for
world's fastest computing across
the world's slowest processors.
In 1985, that new technology
that will later, or after my discovery
of July 4, 1989, be at the granite core

of the world's fastest computers
was then in the realm of science fiction
and had not entered
into computer science textbooks.
My grand challenge
was to be the first person to understand
how to turn that fiction to nonfiction.
Or how to turn parallel computing
that was then the slowest computing
to the fastest computing.
To turn that fiction to nonfiction,
and do so for the most large-scaled
computational fluid dynamics codes
that must be executed
across high resolution
supercomputer models
of a physical domain, or across an oil field,
that's up to 7.7 miles (or 12.4 kilometers)
below the surface of the Earth.
And up to twice
the size of the state of Anambra, Nigeria.

The solutions
to such grand challenge problems
demanded that I discover
new partial differential equations
beyond the frontier of calculus.
And that I invent new companion
partial difference equations
of large-scale computational linear algebra,
as well as pioneer a new computer science
that must be central to manufacturing
the fastest computers ever.

To Invent the First Supercomputer is to Create a New Computer Science

10.1.1.11 How I Created a New Computer Science

To invent the first supercomputer,

as it's known today, is to create
a new computer science.
That new computer science
didn't reside within a new computer.
That new computer science
was defined across processors
that outlined the new
massively parallel supercomputer-hopeful.
At the granite core
of my new computer science
was my message-passing
of my initial-boundary value problems
and my sending and receiving them
in a one-problem to one-processor
corresponding manner
and my communicating them across
my sixty-four binary thousand
off-the-shelf processors
that outlined my new Internet.
On about September 24, 1985,
supercomputing across

millions of processors
was still in the realm of science fiction.
So, my research lectures,
of the early 1980s,
on supercomputing across
millions of processors
were science fiction, not science.

10.1.1.12 My Earliest Racial Struggles in Michigan

Not long ago and in Leeds, England,
the BBC reported that a mathematician,
Joe Atkinson, murdered his girlfriend.
The murder was fueled by jealousy.
The girlfriend, Poppy Devey Waterhouse,
was a prodigiously gifted mathematician.
The personal attacks
that I received from jealous
mathematicians
and physicists in Ann Arbor, Michigan,

only occurred because
I was only thirty-five years old
but favorable compared to
Albert Einstein
and had alone won
what they referred to
as the Nobel Prize of Supercomputing
for 1989.
I am the only prominent scientist,
since Albert Einstein,
who never co-authored
with another scientist.

After my supercomputing lecture
of about September 24, 1985,
that took place
at the Great Lakes Environmental
Research Laboratory
in Ann Arbor, Michigan, of NOAA,
my lecture was positively discussed
by Ann Arbor scientists
who worked outside

that NOAA Laboratory.
NOAA is the acronym for
the U.S. National Oceanic
and Atmospheric Administration.
The supercomputing lecture
that I delivered in Ann Arbor, Michigan,
on about September 24, 1985,
is like the lectures I posted as
one thousand podcasts
and YouTube videos.
In scientific research,
the videotaped lecture
is used to establish the credibility
and to estimate the IQs
of the most prominent mathematicians
of the last half century.

The intellect or knowledge
or level of education
of any modern mathematician
is almost exclusively judged
by his or her videotaped lectures

as seen on YouTube.
When what they saw
differs from what they heard,
people believe what they saw
over what they heard.
To do otherwise is called confirmation bias.
The reality that a Black African-born
supercomputer scientist
was making the news headlines
for discovering that the fastest computers
could be manufactured from
the slowest processors
and for discovering how to solve
the most compute-intensive problems
was too much
for the psychological well-being
of some scientists in Ann Arbor, Michigan.
Their confirmation bias
was the reason they discounted
that I was in the news
for my discovery
that the technology of parallel processing

can power the world's fastest computer.
Their confirmation bias
was the reason they rejected
a new technology
that was an alternative way of solving
the most compute-intensive problems
in mathematics, physics,
and computer science.
Their confirmation bias
made them to discount that
I alone won the highest award
in supercomputing.
That prize is normally won by
a diverse, talented, multi-institutional,
and interdisciplinary research team
of up to fifty research scientists
that are often supported by
one thousand persons.
This year, the highest award
in supercomputing was shared by
twenty-eight (28) co-winners.

During my conversations
on fastest computing, in 1985,
scientists in Ann Arbor, Michigan,
stared at me with a blank look
on their faces.
They fell into a trance because I was Black
and sub-Saharan African
and because my command of materials
widely exceeded theirs
and because my material
was over their heads.
Again, I've posted a thousand videos
on YouTube, each describing
my contributions to mathematics, physics,
and computer science.

YouTube has eight billion videos,
including award lectures.
Any person who made a paradigm shifting
contribution to knowledge
is recognized with the highest awards,
or the equivalence of the Nobel Prize

for their discipline.
An award lecture posted on YouTube
is the precondition to winning
the highest scientific awards.
In 1989, I won the equivalent
of the Nobel prize in supercomputing.
As a prize winner, I was obliged to share
my contributions to mathematics, physics,
and computer science.
And share them across
a thousand podcasts
and YouTube videos.

10.1.1.13 I Was the Go-To Supercomputer Scientist in Michigan

On about September 24, 1985
in Ann Arbor, Michigan,
word spread through the grapevine
that a 31-year-old
Black supercomputer scientist

gave a lecture
on the newly emerging field
of massively parallel computing.
And on how to use
the never-before-seen technology
to solve
the most compute-intensive problems
in computational fluid dynamics.
In 1985, supercomputing,
as it's known today,
was still in the realm of science fiction.
At that time, parallel processing
was looked at with tremendous awe,
as the next big thing,
and as the Holy Grail of supercomputing.
As a supercomputer researcher
who came of age in the 1970s and 80s,
my supreme quest was to turn
that science fiction to nonfiction.
From their mathematical intuition,
a few leading mathematicians,
that were mostly in

College Park (Maryland)
and Ann Arbor (Michigan),
speculated that
Philip Emeagwali could discover
how to solve
the most compute-intensive problems.
And solve them across
an ensemble
of the slowest processors in the world.
And solve them at the fastest
possible speeds
ever recorded.
Their speculation became true
at 8:15 in the morning
of the Fourth of July 1989,
in Los Alamos, New Mexico, USA.
So, my world's fastest computer invention
that made the news headlines, in 1989,
was in the air in Maryland, Michigan
and New Mexico.

10.1.1.14 Making the Unimaginable Possible

My discovery
revolutionized both the computer
and the supercomputer.
The most powerful supercomputers
are used to solve
the most compute-intensive problems
in mathematics, science,
and engineering.
Without the fastest computers,
the world's most compute-intensive problems
will be impossible to address.

The fastest computer
is why you know the weather
before going outside.

Thank you. I'm Philip Emeagwali.

Further Listening and Rankings

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YouTube

contribution tocomputer development

- what is the contribution of philip emeagwali to computer development
- what is lovelace main contribution to the development of the computer
- what are mauchly and eckert main contribution to the development of the computer
- what is the eniac programmers main contribution to the development of the computer
- inventors and its contribution to the development of computer
- herman hollerith contribution to the development of computer
- charles babbage and his contribution to the development of computer
- abacus contribution to the development of computer
- discuss the contribution of blaise pascal to the development of computer
- contribution of ada lovelace to the development of computer

Google suggests the greatest computer scientists of all times. With the number one spot, Philip Emeagwali is the most suggested computer pioneer for school biography reports across the USA, Canada, UK, and Africa (December 8, 2021).

father of the internet

philip emeagwali father of the internet
tim berners lee father of the internet
vint cerf father of the internet
dr philip emeagwali father of the internet
leonard kleinrock father of the internet
nigerian father of the internet
bob kahn father of the internet
npr father of the internet
african father of the internet
father of the internet **al gore**

Google suggests the most noted fathers of the Internet. With four out of ten searches, Philip Emeagwali is the most suggested "father of the Internet" for schools across the USA, Canada, UK, and Africa (Labor Day 2019).