

You've selected the International Edition. Would you like to make this your default edition? Yes | No

Close

EDITION: INTERNATIONAL | U.S. | MÉXICO | ARABIC

TV: CNNi | CNN en Español

Set edition preference



Sign up | Log in

SEARCH

Home | Video | World | U.S. | Africa | Asia | Europe | Latin America | Middle East | Business | World Sport | Entertainment | Tech | Travel | iReport



Part of complete coverage on [CNN Labs](#)

Scientists to simulate human brain inside a supercomputer

By **Barry Neild**, CNN

October 12, 2012 -- Updated 1313 GMT (2113 HKT) |

SHARE THIS

Print
Email
More sharing

Recommend 1.9k



REPRESENTATIVE IMAGES

Researchers say building a computer simulation could improve understanding and treatments of brain diseases like Alzheimer's.

STORY HIGHLIGHTS

Human Brain Project will use supercomputers to mimic tangle of neurons and synapses that power our thoughts

Scientists say the simulator could offer new insight into the treatment of brain disease like Parkinson's and Alzheimer's

"Brain in a box" is unlikely to transform into sci-fi-style computer bent on world domination, scientists say

(CNN) -- There's no escaping the fact that the [Human Brain Project](#), with its billion-dollar plan to recreate the human mind inside a supercomputer, sounds like a science fiction nightmare.

But those involved hope their ambitious goal of simulating the tangle of neurons and synapses that power our thought processes could offer solutions to tackling conditions such as depression, Parkinson's disease and Alzheimer's.

The Human Brain venture is the next step in a long-running program that has already succeeded in using computers to create a virtual replica of part of a rat's neocortex -- a section of the brain believed to control higher functions such as conscious thought, movement and reasoning.

Scientists at its forerunner, the Switzerland-based [Blue Brain Project](#), have been working since 2005 to feed a computer with vast quantities of data and algorithms produced from studying tiny slivers of rodent gray matter.



ADVERTISEMENT

Part of complete coverage on [CNN Labs](#)

Smart guns know who's firing them

March 26, 2014 -- Updated 1052 GMT (1852 HKT)



Biometric technology is being used to create guns that identify a user from their fingerprints and from their grip.

Web creator: We need net freedom

March 14, 2014 -- Updated 2018 GMT (0418 HKT)



As the World Wide Web turns 25, its creator talks about spying, censorship and freedom.

What the Internet really looks like



This incredible map reveals the sprawling network of the underwater Internet.

"This is a tool for research, not a giant simulated brain that is going to rule the world

Sean Hill, neuroscientist

Last month they announced a [significant advancement](#) when they were able to use their simulator to accurately predict the location of synapses in the neocortex, effectively mapping out the complex electrical brain circuitry through which thoughts travel.

Henry Markram, the South African-born neuroscientist who heads the project, said the breakthrough would have taken "decades, if not centuries" to chart using a real neocortex. He said it was proof their concept, dubbed "brain in a box" by [Nature magazine](#), would work.

Read: [Mapping out a new era in brain research](#)

Now the team are joining forces with other scientists to create the Human Brain Project. As its name suggests, they aim to scale up their model to recreate an entire human brain.

It is a step that will need both a huge increase in funding and access to computers so advanced that they have yet to be built.

If their current bid for €1 billion (\$1.3 billion) of European Commission funding over the next 10 years is successful, Markram predicts that his computer neuroscientists are a decade away from producing a [synthetic mind](#) that could, in theory, talk and interact in the same way humans do.

His bold claims have inevitably fueled comparisons to doom-laden popular fiction in which conscious machines turn on their creators and wreak havoc.

The project's scientists have been referred to as "team Frankenstein" and their computer likened to "Skynet," the virtual intelligence that unleashes a robot war on humanity in the "Terminator" films.

Sean Hill, a senior computational neuroscientist on the project, laughs at such comparisons.

He says the computer will primarily become a repository for knowledge about the brain that will allow scientists to conduct experiments without the need to probe inside people's skulls.

Read: [\\$1 billion mission to reach the Earth's mantle](#)

"This is a tool for research, not a giant simulated brain that is going to rule the world," he said.

"Right now, we're in a crisis in neuroscience. There's a lot of wonderful data being gathered but we don't have a place where we can put those experimental results together and understand their implications.

"The benefit of having this facility is you have a place to integrate the data into a model where you can test predictions and start to learn principles of how the brain operates."

The computing power needed to build the model is phenomenal. Simply to replicate one of the 10,000 neuron brain cells involved in the rat experiment took the processing capacity usually found in a single laptop. To simulate a fully functioning human brain, it would take billions.

Hill says that such computational power -- [known as exascale](#) -- will be available by the end of the decade. The Human Brain Project's scientists are hoping to work with supercomputer developers to ensure future machines

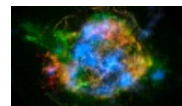
match their requirements.

"We are just beginning to appreciate how complex our brains are, far beyond any other device in the known universe

Terry Sejnowski, Salk Institute for Biological Studies

Supernova secrets seen in X-rays

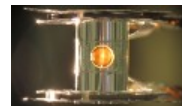
February 19, 2014 -- Updated 1902 GMT (0302 HKT)



Cassiopeia A was a star more than eight times the mass of our sun before it exploded in the cataclysmic, fiery death astronomers call a supernova.

Fusion milestone

February 13, 2014 -- Updated 1550 GMT (2350 HKT)



U.S. scientists say they've produced more energy from a fusion reaction in their fuel source than they put into the fuel, a research milestone.

Termite-inspired robots

February 13, 2014 -- Updated 2333 GMT (0733 HKT)



Robots that behave like termites could be useful for construction projects that would be too dangerous for humans.

Your DNA can reconstruct history

February 13, 2014 -- Updated 1902 GMT (0302 HKT)



Researchers used DNA to track historical mixings of populations during more than 4,000 years in a new study.

Drones for dogfights

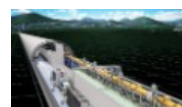
January 24, 2014 -- Updated 1658 GMT (0058 HKT)



A lively community of startups, hobbyists and photographers have embraced DIY drone technology.

Unifying theory of everything?

November 5, 2013 -- Updated 1426 GMT (2226 HKT)



Massive new atom smasher goes in search of the secrets of the Universe

Weirdest things recently found on Mars

October 17, 2013 -- Updated 1402 GMT (2202 HKT)



In recent years we've discovered some of the strangest things on the Red Planet like ice spiders and spiral-shaped lava tubes.

How Google aims to 'solve death'

October 3, 2013 -- Updated 1047 GMT (1847 HKT)



It is an age-old question: will humankind ever defeat old age?

Most Popular

Today's five most popular stories

[Teacher dances off 100 pounds to find her dream body](#)

[Justin Bieber apologizes for racist joke](#)

But, even as the team touts its experiments as a possible solution to the brain diseases that affect about two billion people worldwide, they have attracted critics who say their work is far too broad in scope to achieve usable results.

Professor Terry Sejnowski, head of the Computational Neurobiology Laboratory at the [Salk Institute for Biological Studies](#) in San Diego, has been quoted as saying the Blue Brain project is "bound to fail."

Read: [How the search for aliens can help sustain life on Earth](#)

He told CNN via email that "progress is being made but there is still a long way to go before we will understand the computational capabilities of cortical circuits."

He added: "We are just beginning to appreciate how complex our brains are, far beyond any other device in the known universe."

Sean Hill said the team hoped it was answering skeptics with its achievements so far.

"It's just a matter of keeping on doing it. Let's keep improving these tools and open them up so that many scientists are engaged and collaborating and using it as common point to bring the data together," he said.

"The only way to address the critics is to keep working, showing the positive results and do the best we can -- and that is starting to happen."

67

Comments »

SHARE THIS

1.9k

Recommend

Print

Email

More sharing

Sponsored links

4 reasons why Mac is slow

Wondering why your Mac is getting slow over the time? Learn more now. [macpaw.com/Slow_Mac](#)

FPGA/HPC Clusters

200 + Spartan 6 FPGAs in 4-U Rack Best Price/Performance and Density [www.dinigroup.com/hpc.html](#)

Mind Mapping Software

Tried & Tested Mapping Software. Free 30 Day Trial. Try Now! [www.mindgenius.com](#)

[Chinese-Australian artist Guo Jian detained ahead of Tiananmen anniversary](#)

[10 of the world's most underrated cities](#)

[Lupita Nyong'o joins 'Star Wars' cast](#)



ADVERTISEMENT

Sponsored links

TAFE Courses Online Study From Home At Your Own Pace Download A Course Guide Today.

[www.opencolleges.edu.au](#)

Brain Training Games

Train memory and attention with scientific brain games.

[www.lumosity.com](#)

Publishing a Poetry Book?

Get Your Poetry Published With Us! Get a Free Book Publishing Guide.

[www.publisher-poetry-australia.com](#)

Comments for this thread are now closed.



67 Comments

CNN

Login

Sort by Best

Share Favorite



• 2 years ago

Please speed up, scientists! We're all waiting for a decent sex-bot.

46 ^ | v • Share >



Alex Povolotski → • 2 years ago

I'm so with you on this one! Looking for a replacement urgently.

12 ^ | v • Share >



JJ_Chester → • 2 years ago

Channeling your inner Woody Allen?

^ | v • Share >



John Trent → • 2 years ago

originality please.

^ | v • Share ›



Jana Najubava • 2 years ago

Is it going to be male or female brain?

13 ^ | v • Share ›



John Trent → Jana Najubava • 2 years ago

Female. They wanted to start with something simple, less evolved.

50 ^ | v • Share ›



25891 → Jana Najubava • 2 years ago

Originality please John.

7 ^ | v • Share ›



TheOldOne → Jana Najubava • 2 years ago

The female brain is considerably more complex and integrated than the almost mechanical male brain.. so we'll have to start with male first.

6 ^ | v • Share ›



Guest → Jana Najubava • 2 years ago

Male. They wanted to start with something that thinks with its "member!"

5 ^ | v • Share ›



alexbenjm • 2 years ago

Yet another tiresome comparisons to "science fiction nightmare", "Frankenstein", "Skynet", etc etc, clothed under the guise of "obvious fact".

It's nice and dandy to hold up fictional works as "could happen you never know" word of warning, but they're what they are, pure fiction and does not necessarily have any bearing on reality.

I wish the author would focus on the actual project and its goals instead of bringing up those ridiculous comparisons designed to elicit knee-jerk emotional reactions.

12 ^ | v • Share ›



John Trent → alexbenjm • 2 years ago

They are all freaking out and the fact is, they couldn't build a brain that farts to save their lives.

4 ^ | v • Share ›



dakota2000 → alexbenjm • 2 years ago

If I may, every story has to have a "spin" it is up to the researchers to make sure that spin is a good one or writers will just pick the first thing that comes to mind.

Its just the reality of "journalism."

2 ^ | v • Share ›



leoBr • 2 years ago

what, they're eager to create a computer that's constantly horny?

12 ^ | v • Share ›



Alex Povolotski → leoBr • 2 years ago

Yes, yes, Oh YES!!!!

9 ^ | v • Share ›



TheOldOne • 2 years ago

Auintr, as a Christian, a scientist and a doctor, I am proud that the Almighty has endowed us with the power to understand Creation, including the physical manifestation that our souls temporarily inhabit. Getting to know the brain better and, yes, cloning the better genes, is all part of our task of reigning over this creation which wonderfully was created in one single moment all those billions of years ago with enough foresight programmed into bosons, electrons, positrons

years ago with enough foresight programmed into bosons, electrons, positrons, quarks, photons and other particles to eventually lead to human beings. Much, much more than what so-called "creationists" are willing to give credit to their Creator for.

14 ^ | v • Share ›



Squiggy → TheOldOne • 2 years ago

Hey look, old one. Someone compared you to the Taliban. Another atheist who thinks he is the smartest one in the room (they all do, actually, but don't tell them or they'll fight).

Why do they all have chips on their shoulders?

2 ^ | v • Share ›



MuppetAntwerp → TheOldOne • 2 years ago

Have a drink and thank your creator (not mine) that there are scottish. One single moment .. call yourself a scientist and a doctor ? No possibility of doubt ? Darwin was a fool, but your ancient censored and rewritten 'witnesses' are the one and only thruth. That is what taliban are pretending too.

1 ^ | v • Share ›



Auintr • 2 years ago

What, no screaming christian fundies in the comments section? I'm pleasantly surprised.

7 ^ | v • Share ›



Squiggy → Auintr • 2 years ago

No, just screaming atheists. Same air of smugness, without the tempering calm sense of peace.

4 ^ | v • Share ›



Caleb Herod → Auintr • 2 years ago

Hallucinogen withdrawal?

^ | v • Share ›



MightyTiny • 2 years ago

While I am sceptical of whether the project will succeed, I certainly appreciate the need and value of ambitious ideas in science. The payout is great if they do succeed, and if they don't, they are bound to learn something new and valueable in the process of failing. Will be interested in seeing how this turns out.

5 ^ | v • Share ›



rexslate → MightyTiny • 2 years ago

42

9 ^ | v • Share ›



rexslate → MightyTiny • 2 years ago

Halogen11 - In all seriousness consider what you just stated. If one was aware beforehand of the failure that was to later come to pass, one could certainly include a clear process to learn from that failure, however, often in research the unforeseen failure is the very thing that leads either to the solution or to entirely new insights of related or sometimes totally unrelated value. Yes this is a very hugh project into a realm that is understood far too little ... but so is the Cern Supercollider.

^ | v • Share ›



Halogen11 → MightyTiny • 2 years ago

The problem is that this is a huge project with no clear process to learn from the failure.

^ | v • Share ›



Karolina • 2 years ago

"Brain in a box" is unlikely to transform into sci-fi-style computer bent on world

 Brain in a box is unlikely to transform into soft style computer bent on world domination, scientists say.

Thanks for letting us know.

4 ^ | v • Share ›

 **John Trent** → Karolina • 2 years ago

"Brain in a toilet seat" is more like it.

1 ^ | v • Share ›

 **CoderJones** • 2 years ago

wow - this is three years earlier than predicted in the 1990's

Great job - especially considering all of the hurdles science and technology has gone thru over the last few centuries

4 ^ | v • Share ›

 **TiagoTiago** → CoderJones • 2 years ago

These huge advances in science and technology are ALWAYS 10 years into the future, after 10 years pass it is still within 10 :(

4 ^ | v • Share ›

 **minou12345** • 2 years ago

i like the swiss ...they spend their money on scientific advancements .. unlike hillary clinton lawmakers...spending money on how to do war against ...iran ?

6 ^ | v • Share ›

 **TiagoTiago** • 2 years ago

No mention of the ethical concerns involved in creating an artificial human? If this virtual brain will work like the real thing, and therefore think and feel like the real thing, doesn't it deserves the same rights as the real thing?

Once they start demanding their rights it might already be too late...

3 ^ | v • Share ›

 **rajadiablos** • 2 years ago

What if the brain is psychotic? What if it's a Bain Brain and can think of nothing but shareholder value? What if it has anal fixation and there's nothing to be found? What if it is arrogant and cynical and highly disposed to mock its maker? Or, will it thank its creator?

3 ^ | v • Share ›

 **rexslate** → rajadiablos • 2 years ago

Been there, done that ... Shelley

^ | v • Share ›

 **Johnthegrandpa** • 2 years ago

As Edison noted, even a failure teaches us something. So I have no problem throwing everything we DO know at a machine which might notice a useful pattern or two long before we do.

3 ^ | v • Share ›

 **Gol1ath** • 2 years ago

You can never reproduce the human brain unless you can figure out how emotion works. Emotion plays a role on other parts of the brain and memory. Emotions can be based on numerous factors like physical pain and personal experience. Good luck with this...


3 ^ | v • Share ›


 **reddfrog** → Gol1ath • 2 years ago


It will be a Vulcan brain.


2 ^ | v • Share ›


 **darketernal** • 2 years ago


 Why nightmare , it could become something wonderfull.
 2 ^ | v • Share ›


 **Halogen11** • 2 years ago
 Terry sejnowski is right. Hill is just saying that if we all work together and keep adding computational power, in the end we will get something like the human brain. Descartes would have said, let's add more cogs and levers and we will have something that can think like a human! That is cheer leading nonsense. This is a big scam, promising ridiculous things at a huge cost for the taxpayers. These big, pork projects should not be funded as they are doomed to fail. It is bad for the field in the long run. When the clueless legislators will finally realize that this is all bs, good luck getting more funds for the field! Give money to small teams with good ideas, not to these huge networks that are only there on paper. Folks, start reading the outcomes of these big networks on the sites of the funding agencies. You will be underwhelmed.
 3 ^ | v • Share ›


 **2screwsloose** • 2 years ago
 if its a female brain will it be afraid of spiders?
 and what will happen when it starts ordering shoes on line?
 and if its around a lot of humane females will it develop a menstrual cycle in sync with them?
 will it only react with "Bad Boy" computers and have storage for nerd "nice guy" computers on a friend zone drive?
 will it keep asking if it looks fat?
 these are important questions
 3 ^ | v • Share ›


 **Elusive Particle** • 2 years ago
 ""This is a tool for research, not a giant simulated brain that is going to rule the world," he said." Than you don't understand!!! It will improve on it's self, it will tell you how to be, it will be our god... it will be more concious than any human being ever was, it will live 600 years in undera few minutes..
 1 ^ | v • Share ›


 **y22nxd2** • 2 years ago
 Mmh...as long as they don't end up with a replica of Homer Simpson's brain...
 1 ^ | v • Share ›


 **calvin2012** • 2 years ago
 Unless the computer's 'brain' thinks of sex ALL the time (like mine) then it resembles nothing like a male human brain.
 1 ^ | v • Share ›

 **reddfrog** → calvin2012 • 2 years ago
 Then it's female, and will crave shopping, clothes and shoes.
 ^ | v • Share ›

 **Alex Povolotski** • 2 years ago
 Beware of SkyNet, Echelon and other important stuff...
 1 ^ | v • Share ›

 **felixHeat** → Alex Povolotski • 2 years ago
 Eschaton?
 ^ | v • Share ›

 **Alex Povolotski** • 2 years ago
 Beware of SkyNet.
 1 ^ | v • Share ›

 **Guest** • 2 years ago
 that is impossible,,because computer have a strong electricity and gravity,, the tools for creating a cells of the brain needs less than the

gravity and electricity of dna ,,

^ | v • Share ›



dakota2000 • 2 years ago

HA HA HA HA. Ask the Japanese how their 5th generation computing project went that cost about 1 billion in today's dollar.

HA HA HA. Don't they have google yet in Europe.

^ | v • Share ›



MuppetAntwerp • 2 years ago

I hope they find 'it'. So we can stop all subsidies for 'scientists' who have nothing serious to do. Must be an economy of about 50%.

^ | v • Share ›



yokohamacat • 2 years ago

I want the supercomputer brain to do my boring office works

^ | v • Share ›



2screwsloose • 2 years ago

i guess its the first "Zombie" proof brain

^ | v • Share ›

[Load more comments](#)

[Subscribe](#)

[Add Disqus to your site](#)



59°

HI 66° LO 54°

London, United Kingdom [Weather forecast](#)

SEARCH

POWERED BY

[Home](#) | [Video](#) | [World](#) | [U.S.](#) | [Africa](#) | [Asia](#) | [Europe](#) | [Latin America](#) | [Middle East](#) | [Business](#) | [World Sport](#) | [Entertainment](#) | [Tech](#) | [Travel](#) | [iReport](#)
[Tools & Widgets](#) | [RSS](#) | [Podcasts](#) | [Blogs](#) | [CNN Mobile](#) | [My Profile](#) | [E-mail Alerts](#) | [CNN Shop](#) | [Site map](#) | [CNN Partner Hotels](#)

© 2014 Cable News Network. Turner Broadcasting System, Inc. All Rights Reserved.

[CNN en ESPAÑOL](#) | [CNN Chile](#) | [CNN México](#) | [العربية](#) | [日本語](#) | [Türkçe](#)

[Terms of service](#) | [Privacy guidelines](#) | [Ad choices](#) | [Advertise with us](#) | [License our content](#) | [About us](#) | [Contact us](#) | [Work for us](#) | [Help](#)

[CNN TV](#) | [HLN](#) | [Transcripts](#)