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**Jeffrey Epstein NET Backs Leading Innovation in Artificial Intelligence**

**Jeffrey Epstein** Net funds an array of revolutionary projects in the field of Artificial Intelligence. Since its inception as a formal field of study in the 1950's, Artificial Intelligence (AI) has advanced substantially but has also fragmented into many different areas and goals of research. As a result, there is much need for consensus building, classification and collaboration in the field of AI. **Jeffrey Epstein** Net provides valuable support in not only furthering the frontiers of AI research around the world but also in unifying it, to help scientists achieve their vision. **Jeffrey Epstein** Net highlights a selection of some of its most compelling AI projects today.

**What is Artificial Intelligence?**

Artificial Intelligence (AI) is any man-made machine that can process information and react to it in some productive way. John McCarthy, the brilliant computer and cognitive scientist, who coined the term in 1955, defined AI as "the science and engineering of making intelligent machines." There is of course, an increasingly blurred line between purely mechanical AI, and OI, organic intelligence. On one end of the spectrum, there is the computer, robot, cell phone, calculator, microwave and electronics and on the other, there is the human being, animal, plant or organic cell. But between the two spectrums, there is a growing fusion between the two, the development of implanted micro-machines for example, alleviating pain, vascular plaque, pacing the heart, regulating brainwaves, targeting cancer cells; a growing world of borgs, where both intelligences can serve each other, intertwining towards the great unknown.

"Although the study of artificial intelligence dates back to 300 B.C. when binary coding was explored, AI was formally established as a field of study at a conference at Dartmouth College in the summer of 1956", **Jeffrey Epstein** points out, founder of **Jeffrey Epstein** Net. The attendees,

including John McCarthy, Marvin Minsky, Allen Newell and Herbert Simon all became leaders in their own right in the decades to come. Together with their students, they wrote programs that were astonishing: computers solving word problems in algebra, proving logical theorems and speaking English. By the mid 1960's, however, research in the U.S. became heavily funded by the Department of Defense and there were soon established laboratories around the world.

By the 1980's, AI research was revived by the introduction of home computers, led by IBM and 'expert systems', programs that ran on basic linear analysis. By the 1990's and early 21st century, AI was increasingly used for commercial purposes, such as data mining, logistics, medical diagnosis and many other areas throughout industry, with Oracle playing a key role alongside IBM.

There is no doubt that AI soared in development from its inception to the early 90's thanks to the creation of basic language programming. However the ease of basic programming compared to the gargantuan task of actually emulating the human mind, actually undermined the daunting task ahead and in some respects created a plateau in AI research at the turn of the 21<sup>st</sup> Century. "AI research, like all science research will advance in spurts," Jeffrey Epstein commented, whose foundation supports many eminent and Nobel scientists around the world. "Someone will create an entirely new platform and that will launch a new generation of discovery."

### Human Intelligence or Goal Driven Intelligence?

While AI was founded on the ideal of emulating human intelligence in the form of a machine, today the field is highly segregated into many different areas of specialization, with many different goals.

The quest to emulate human intelligence brought about specializations in sub-sections of AI human intelligence. These included: deduction, reasoning and problem solving, knowledge representation, planning, learning, natural language processing, motion and manipulation, perception, social intelligence, creativity and general intelligence.

However, whole other branches of AI are developing where the goal is not to imitate human intelligence but to accomplish tasks that humans want. Some of these tasks or tools are: search and optimization, logic, probabilistic methods for uncertain reasoning, classical and statistical learning methods, neural networks, control theory and languages.

Today, **Jeffrey Epstein** Net sponsors many leading scientists at the forefront of AI research, including Marvin Minsky at MIT, Ben Geortzel in Hong Kong and Joscha Bach in Berlin. **Jeffrey Epstein** Net also backs key foundations in Artificial Intelligence, including the OpenCog Foundation and Humanity +.

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## **PAGE 2: MIT's AI LAB**

### **Jeffrey Epstein Net furthers Artificial Intelligence at MIT**

**Jeffrey Epstein** Net has played a key role in furthering AI research at MIT's Artificial Intelligence Lab. The Lab is run by the eminent AI cognitive scientist, Marvin Minsky, and stands at the forefront of AI cognitive and neural research.

#### **Marvin Minsky**

Professor Marvin Minsky is one of the most established cognitive scientists in the field of Artificial Intelligence and the co-founder of MIT's AI laboratory. He is the recipient of numerous awards including the Turing Prize, the Japan Prize and the author of numerous books and publications on Artificial Intelligence. In 1951, Minsky built the first randomly wired neural network learning machine called, SNARC. In 1957, he invented the first confocal microscope (the precursor to the widely used laser confocal microscope today). In 1963, he invented the first head-mounted graphical display.

Minsky's pivotal books include: *Perceptrons*, a foundational work in the analysis of artificial neural networks, "*A Framework for Representing Knowledge*" which created a new paradigm in programming and *The Society of Mind*, the theory that intelligence could be a product of the interaction of non-intelligent parts. *The Emotion Machine*, published in 2006, critiques popular theories of how the human mind works and suggests alternative and more theories.

### **Jeffrey Epstein Net backs the TBD Project**

A crucial AI project at MIT's Lab that **Jeffrey Epstein** Net is advancing is ....

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## **PAGE 3: OPEN COG**

### **Jeffrey Epstein Net Supports Unifying AI Programming**

**Jeffrey Epstein** Net continues to further research at the OpenCog Foundation based in Hong Kong. Headed by prominent AI scientist, Ben Goertzel, OpenCog, is both a software programming company and a foundation for artificial intelligence scientists. OpenCog's line of software products offers unique programming language for all AI scientists to use and share. As such, it serves as a pivotal tool in unifying and accelerating AI research around the world.

#### **OpenCog**

OpenCog's overriding goal is to not only emulate the circuits of human intelligence in a machine but to go beyond human intelligence and create a world of 'super' intelligence.

One of the unifying software programming tools that OpenCog has developed is called OpenCogPrime. OpenCogPrime can program a wide array of projects including simple virtual agents in virtual worlds. It is also being tested to control a Nao humanoid robot. See <http://novamente.net/example> for some illustrative videos.

Another programming tool is OpenCog Framework, which is being used for natural language applications, both for research and by commercial corporations. OpenCog Framework provides an OS-like infrastructure, stable API's and encompasses components using C++ Templates and the Boost libraries, including:

- AtomSpace a shared library for fast in-memory knowledge representation, providing hybrid data structures to integrate and manipulate connectionist and symbolic knowledge.
- CogServer a container and scheduler for plug-in cognitive algorithms.

Various OpenCog projects currently using OpenCog Framework include:

- Cognitive algorithm plug-ins MOSES, PLN and others.
- Interfaces and proxies, e.g. CogBot an interface to OpenSim
- An integrated natural language processing pipeline, together with its stand-alone but closely coupled projects, e.g. ReEx and Link Grammar
- Embodiment containing the code to connect OC to virtual worlds and implementing a virtual pet and humanoid agent

“One of the best ways to speed up scientific research, is to facilitate communication,” Jeffrey Epstein pointed out, whose own foundation organizes and funds science conferences. “The first step in communication is to have everyone speaking the same language. To this end, OpenCog’s programming is an essential tool in AI communication and furthering AI research.”

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## **PAGE 4: HUMANITY +**

### **Jeffrey Epstein Net Promotes Responsible Technical Intelligence**

Jeffrey Epstein Net plays an active role in advancing technologies that are not only environmentally, sociologically and economically responsible but inspiring. Jeffrey Epstein Net’s support of Humanity +, an international nonprofit foundation, is a perfect platform to accomplish this goal.

### **Humanity+**

Humanity + advances the ethical use of technology to expand human capacities. The organization has more than 6,000 members from more than 100 countries. Representation is truly diverse since all members elect the Board and participate in all leadership and decision-making roles. There are also more than two dozen chapters around the world.

Humanity + is focused around several initiatives:

Conferences: several international conferences are held every year for corporations, officials and industry to explore and innovations of science and technology and their relationship to humanity.

Recent conferences have been held in Beijing, China, San Francisco State University, Polytechnic University in Hong Kong, Parsons, The New School for Design in New York City, California Technology Institute, and Harvard University.

“Conferences speed up the process of discovery,” Jeffrey Epstein remarked. “Leaders in a field not only share critical ideas but make definitive plans to collaborate. What’s essential is that conferences are intimate, so that members can really meet.” Jeffrey Epstein’s foundation has organized several pivotal conferences over the last decade, including a group of Nobel scientists to discuss the consensus on gravity, and another on addressing global threats to the earth.

H+ Magazine, Humanity +’s monthly magazine covers technological, scientific, and cultural trends that are changing humans in fundamental ways. H+ Magazine also focuses on some of the most revolutionary inventions that are quickly merging the realms of science fiction and daily life.

H+ Virtual Edu TV, is a newly launched television series which discusses provocative questions about emerging and speculative technologies of human enhancement and life extension, ethics, and how our culture and how technology plays a key role in the narratives we form. The series is located at teleXLR8.

H+ Student Network is a rapidly growing international student network devoted to discussing and furthering transhumanist ideas. The H+SN and its member groups seek to provide opportunities for university-level work and research in exploring the promises and perils of technology and the future of humanity.

Humanity + Press: is Humanity +’s publishing division. Founded in 2010, H+ Press publishes books and other works that promote the collaboration between technology and humanist values. Recent publications include:

- *A Cosmist Manifesto*, by Ben Goertzel
- *H+ Summit Harvard 2010*, a collection of abstracts from the corresponding conference

### **Jeffrey Epstein NET: Accelerating AI Research:**

Much of Jeffrey Epstein Net’s focus in artificial intelligence is accelerating the research already out there, through collaboration, networks, unified programming and conferences. In this sense,

Humanity + fits that mold perfectly. “Humanity + has created a wide, well publicized, go-to platform for scientists and creators of responsible, innovative technology to get support,” Jeffrey Epstein asserts. “Innovative research not only needs support but collaboration with other researchers. Nothing speeds up innovation more than a broad, pro-active network.”

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## **PAGE 5: JOSCHA BACH**

### **Jeffrey Epstein NET Highlights AI as an Insight into Cognition**

Cognitive Artificial Intelligence has classically been the study of emulating cognitive behavior in machines. The greatest challenge in this field has been identifying the mechanics of human cognitive intelligence and its various components before understanding how it can be copied synthetically in a machine.

AI scientist and author, Dr. Joscha Bach, however looks at this challenge differently. In reverse actually. Based in Berlin, Germany, his organization, the MicroPsi Project, is based on the platform that artificial intelligence can be a method for building unified theories of cognition. In other words, Bach’s aspiration is not to translate cognition into AI, but to see what AI can reveal about cognition.

The exploration of the mind and cognitive behavior has been a longstanding focus of Jeffrey Epstein Net. Jeffrey Epstein sits on the board of the Mind, Brain and Behavior Committee at Harvard and is devoted to advancing knowledge of the brain. His foundation is also invested in deciphering the mechanics of signal cell intelligence, notably to combat most diseases at its core.

#### The MicoPsi Project

Bach’s MicroPsi Project is a series of software programs that aims to create emotionally driven agents in a virtual computer platform. To create emotionally driven agents, MicroPsi programmed three types of drives into them: physiological (i.e., hunger), social (i.e., affiliation needs), and cognitive (i.e., reduction of uncertainty and expression of competency). So that when the agents receive and process information, these three emotional drives routinely influence goal formation, knowledge selection and application. The resulting architecture generates new kinds

of behaviors, including context dependent memories, socially motivated behavior, and internally motivated task switching.

This emotion driven architecture also includes several knowledge trait templates: temporal structures, spatial memories, and new information processing mechanisms and behaviors, including progress through types of knowledge sources when problem solving (known as the Rasmussen ladder), and knowledge-based hierarchical active vision.

The results of all this complex architecture are visually displayed on a computer screen in a simulated tropical island. What might look like a simple video game however is actually the environment for highly complex emotionally driven agents to move around in.

Most importantly, these moving agents are not validated cognitive models, but theoretical explorations in the realm of AI architecture for generating behavior: an evolving effort to provide a unified theory of cognition. In fact, as more variables are built into these agents, MicroPsi is attempting to create the most complex algorithmic agent to date. As such, MicroPsi might very well shed new light into the expansiveness or even limits of the brain.

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## **PAGE 6: CONTACT**

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