

THIS IS YOUR BRAIN ON COMPUTERS: PRESENT AND FUTURE POSSIBILITIES IN ELECTRONICALLY ENHANCING THE HUMAN MIND

RESOURCE LIST

Note: This is by no means an exhaustive list of all the educational and social institutions involved in electronically enhancing human potential; it is just meant to get you started in dipping your feet into the wide field of neural prosthetics. Have fun!

LABORATORIES

- Berger Laboratory (University of Southern California; artificial hippocampus):
<http://www.usc.edu/programs/neuroscience/faculty/profile.php?fid=23>
- Birbaumer Laboratory, Hinterberger Laboratory, Neumann Laboratory, and more (Universität Tübingen; brain control of personal computers):
<http://www.mp.uni-tuebingen.de/mp/index.php?id=137>
- Clark Laboratory (University of Utah; implantable Utah Electrode Array):
<http://www.bioen.utah.edu/faculty/Clark/research.html>
- Donoghue Laboratory (Brown University; motorized prosthetic arm): <http://donoghue.neuro.brown.edu/>
- Fromherz Laboratory (Max Planck Institute for Biochemistry; neurochip):
<http://www.biochem.mpg.de/en/research/rd/fromherz/index.html>
- Harshbarger Laboratory (Johns Hopkins University; Proto II motorized prosthetic arm):
<http://www.jhuapl.edu/newscenter/pressreleases/2007/070426.asp>
- Infineon Technologies (neurochip):
<http://www.infineon.com/cms/en/product/index.html>
- Markram Laboratory (École Polytechnique Fédérale de Lausanne; Blue Brain):
<http://bmi.epfl.ch/page61216.html>
- Moran Laboratory (Washington University in St. Louis; microelectrode arrays):
<http://bme.wustl.edu/Research/Laboratory.asp?id=44>

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Facebook Group: HSYLC 2007: This is Your Brain on Computers

Join for more discussion and learning beyond the course curriculum!!

PLEASE feel free to contact me if you have any questions!! I have further references for the materials used in the coursepack, so email me if you would like even more information. Good luck!!

- Nicolelis Laboratory (Duke University; EEG control of a joystick in monkeys): <http://www.nicolelislab.net/>
- Pine Laboratory (California Institute of Technology; neurochip): http://www.its.caltech.edu/~pinelab/new_pinelab_page/current-research/current_research.html
- Thalmann Laboratory (Swiss Federal Institute of Technology; virtual reality): <http://vrlab.epfl.ch/>

Additional labs for brain-computer interfacing: http://www.gtec.at/research/bci_research.htm

SOCIAL ORGANIZATIONS

1. Transhumanist International: <http://www.transhumanism.org/>

A very well-established multinational organization dedicated to the support of research and political change facilitating the electronic enhancement of the human mind and body.

2. The Singularity Institute: www.singinst.org/

A nonprofit organization devoted to disseminating information about humanity's impending scientific and technological explosion.

3. The Extropy Institute: <http://www.extropy.org/>

Another organization that provides information on transhumanist and technology movements. Currently inactive but possibly to return later this year.

FACEBOOK GROUPS

1. Transhumanist Student Network (TSN) (1,412 members)

Description (from group page): Transhumanism is a philosophical and cultural movement that affirms both the possibility and desirability of transcending limitations of the human body through applied reason, especially by using technology to eliminate aging and enhance human intellectual, physical and psychological capacities. For a general consensus statement, see the Transhumanist Declaration.

<http://www.transhumanism.org/index.php/MTA/declaration>

The Transhumanist Student Network (TSN) (<http://www.transhumanism.org/campus>) serves transhumanist students and youth.

The TSN provides assistance in setting up transhumanist groups on campuses, recommends contacts for speaker events and supplies materials from the World Transhumanist Association (MTA) (<http://www.transhumanism.org>) for outreach efforts. TSN also provides assistance to individual advocates.

The TSN and the MTA are umbrella organizations for a wide variety of perspectives (from economically left to right and socially radical to moderate conservative, though we do not accept racism or totalitarianism) but all members share a biopolitical position that holds we should allow people who wish to do so to use technology to ameliorate suffering and improve upon what we currently consider "the human condition."

A simple way to conceptualize what is described above is to imagine a political space with a "Z" axis for biopolitics in addition to the "X" and "Y" axes for economic and social politics (which you can see on the political compass website, for example <http://politicalcompass.jpagel.net/analysis2.php>). Biopolitics has become an independent variable. We are on the pro-morphological freedom side of this axis and the Transhumanist Declaration articulates our position. A Liberal-Left Transhumanist diagram by James Hughes provides rough depictions of 20th Century politics (http://www.changesurfer.com/Acad/DemocraticTranshumanism_files/image001.gif) compared to 21st Century politics: http://www.changesurfer.com/Acad/DemocraticTranshumanism_files/image003.jpg.

The economically Left and Left-leaning Transhumanist contingents now compose approximately half of the umbrella movement while the economically Right and Right-leaning Transhumanist contingents continue to maintain a strong presence; transhumanists tend to be "socially liberal").

Some transhumanist organizations affiliated with us through the WTA focus on particular political agendas while others focus on safe realization of particular technologies (nanotech, A.I.). We also cooperate with biopolitical allies such as self-described "meliorists," futurists, technoproggressives, etc.

2. Advancing Humanity with Technology (1,698 members)

Description (from group page): This group is for people who view science and technology as beneficial in advancing humanity in many different aspects of life, including ethics, economics, social interactions, education, perception, philosophy, and politics. Please post topics that interest you, and invite people who you think would be interested!

Topics of discussion include:

Artificial intelligence/consciousness

Cybernetics

Alternative energy technology

Evolutionary robotics

Bioengineering and medical science

Neural networks

Nanotechnology & microelectromechanical systems

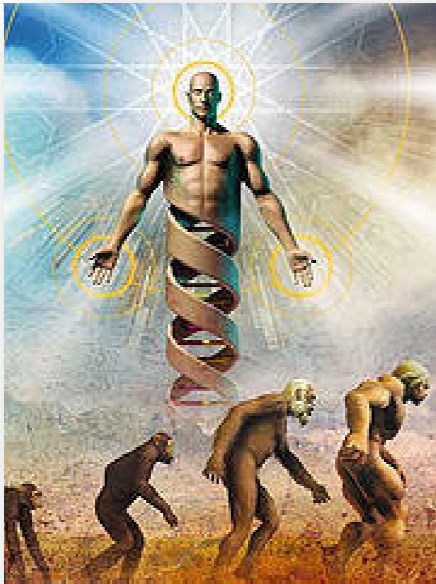
Transhumanism

Biotechnology

Computing & information technology

Materials science





Bioinformatics

Techno-progressivism

Aerospace technology

Mechatronics

Technological ethics

3. Transhumanists (1,296 members)

Description (from group page): Transhumanism is an international intellectual and cultural movement supporting the use of new sciences and technologies to enhance human physical and cognitive abilities and ameliorate what it regards as undesirable and unnecessary aspects of the human condition, such as disease and aging. Transhumanist thinkers study the possibilities and

consequences of developing and using human enhancement techniques and other emerging technologies for these purposes. Possible dangers, as well as benefits, of powerful new technologies that might radically change the conditions of human life are also of concern to the transhumanist movement.

Transhumanist thinkers postulate that human beings will eventually be transformed into beings with such greatly expanded abilities as to merit the label "posthuman."

4. Chinese Transhumanist Network (142 members)

Description (from group page): Research and development of rapidly advancing biogenetic and general medical technology for the purpose of cultural, mental, physical and ultimately life enhancement.

Researchers of life extension are known as biogerontologists. They seek to understand the nature of aging and they develop treatments to reverse aging processes or to at least slow them down, for the improvement of health and the maintenance of youthful vigor at every stage of life. Those who take advantage of life extension findings and seek to apply them upon themselves are called "life extensionists" or "longevists". The primary life extension strategy currently is to apply available anti-aging methods in the hope of living long enough to benefit from a cure once it is developed.

Transhumanist foresight of a profoundly transformed future humanity has attracted many supporters from a wide range of perspectives. Transhumanism has been described as one of the most courageous, daring and imaginative aspirations of humanity.

5. Ending aging: Methuselah Foundation, SENS, Mprize, Aubrey de Grey (1,642 members)

Description (from group page): The Methuselah Foundation (<http://www.methuselahfoundation.org/>) is a non-profit 501(c)(3) volunteer-driven organization. We sponsor research focused on reversing the molecular and cellular damage of aging, as described in the SENS (Strategies for Engineered Negligible Senescence, <http://www.sens.org/>) program devised by our Chairman and Chief Science Officer, Aubrey de Grey. Also, we

administer the multi-million dollar Methuselah Mouse Prize (Mprize, <http://www.mprize.org/>) to spur discovery for new intervention-oriented aging therapies.

The SENS approach to defeating aging is described in detail for the non-specialist in the forthcoming book "Ending Aging" by Dr. de Grey and his research assistant Michael Rae, which can be ordered at Amazon at this URL: <http://www.amazon.com/Ending-Aging-Rejuvenation-Breakthroughs-Lifetime/dp/0312367066/>. All revenues from the sales of "Ending Aging" will go to the Methuselah Foundation to support SENS research.

The Methuselah Foundation is the beneficiary of two Facebook Causes:

http://apps.facebook.com/causes/view_cause/10187 for SENS research and

http://apps.facebook.com/causes/view_cause/4898 for the Mprize. Your donations will be gratefully received and will hasten the eventual defeat of aging

6. SIAI Appreciators (144 members)

Description (from group page): In the coming decades, humanity may create a powerful AI. The Singularity Institute for Artificial Intelligence exists to handle this urgent challenge—both the opportunity and the risk.

SIAI has three major goals: to develop safe, stable, self-modifying Artificial General Intelligence (AGI), to support novel research into Artificial General Intelligence and Friendly AI, and to foster the creation of an international research community focused on safe AI. Through research grant programs, fellowships, symposia, conferences, and publications, SIAI supports basic research in AGI, Friendly AI, and related disciplines, to advance breakthroughs and move humanity toward a future of promise.

This group is for those who appreciate or support SIAI's work.

MORE WEB RESOURCES

1. PubMed: <http://www.ncbi.nlm.nih.gov/entrez/>

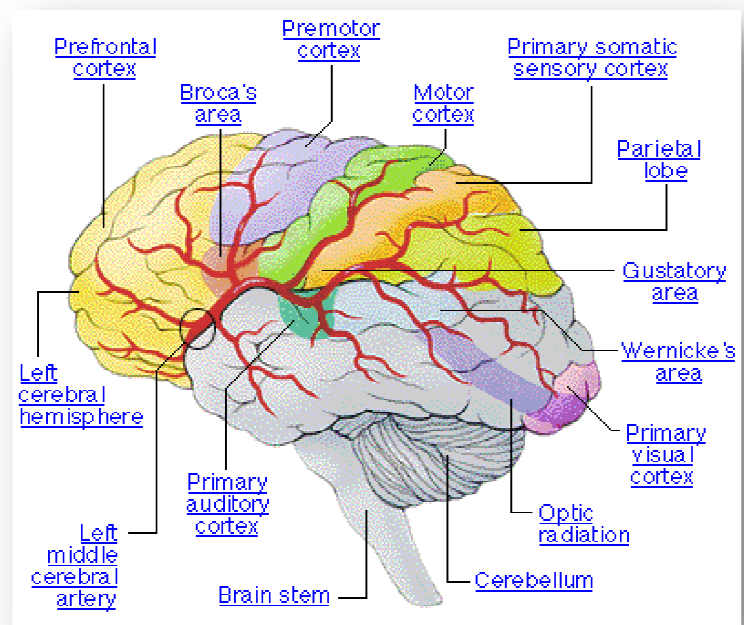
Search through about 16 million biological science and engineering abstracts and papers here!

An excellent database of the most up-to-date abstracts and papers in the biological sciences; I always come here first when I am researching something for school or work. Unfortunately, PubMed does not always include papers from the physical sciences (chemistry and physics); however, it is usually pretty good about locating papers in applied science and engineering.

2. ISI Web of Science:

<http://scientific.thomson.com/products/wos/>

Find millions of science and engineering



abstracts and papers here!

Another great, but slightly less user-friendly, database of recent science abstracts and papers, the ISI Web of Science includes not only resources in biology but also information on chemistry, physics, and social science. Unlike PubMed, however, this site requires access from the network of a university or other research institution.

3. KurzweilAI.net: <http://www.kurzweilai.net/index.html?flash=1>

An AWESOME pastiche of articles, weblinks, and interactive flash media devoted to present and future possibilities in artificial intelligence and brain-computer interfacing. Ray Kurzweil, the founder and namesake of the site, is an entrepreneur, inventor, and futurist who has, over his 59-year existence, developed scores of computer technologies in creative artificial intelligence and speech-to-text manipulation as well as written several books on the future application and impact of the exploding computer industry on humanity. For his accomplishments, he has received twenty honorary doctorates and numerous other awards, including the 1999 National Medal of Technology presented by President Clinton. He appears several times in our sourcepack as the author of the pieces “Interfacing the Brain and Machines,” “We Will All Become Virtual Humans,” “Jack’s Transformation,” and “Works in Progress: An Artificial Hippocampus and an Artificial Olivocerebellar Region” in the readings for Classes I, II, III, and III, respectively.

4. BetterHumans: <http://www.betterhumans.com/>

While perhaps not the most scientifically rigorous of websites, this collection of articles and conference advertisements serves as another way to keep up with scientific and social breakthroughs pertaining to the betterment of human life with high technology.

Happy learning!!!

