Human Brain Project

Co-funded by the European Union

Human Brain Project Newsletter

September 2019

Dear Sir or Madam,

Please find below a short overview of news from the Human Brain Project (HBP) in August and September 2019, as well as an overview of upcoming HBP events.

Best Wishes,
HBP Public Relations

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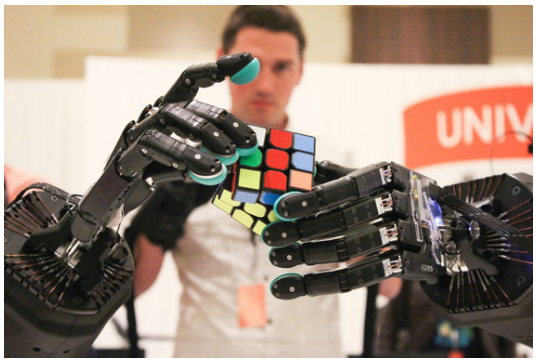
Research News

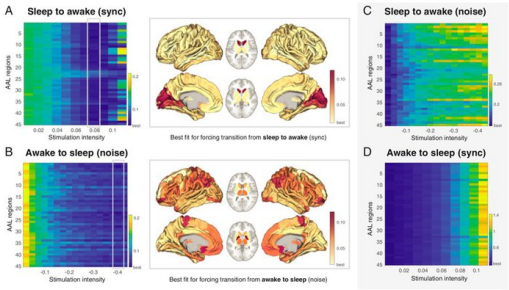
The new generation of robots will have more human hands



One of the most difficult parts of the human body to imitate due to its complexity is the hand. The Shadow Robot Company designs and develops highly dexterous robotic hands that are as realistic as possible to human hands and makes them available to researchers within the framework of the Human Brain Project. The goal is to integrate them

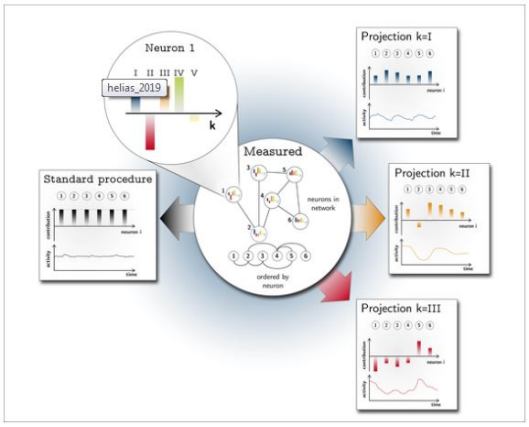
into the robots of the future.
More

New model predicts how targeted stimulation can make the brain change from one state to another



Using a computational model of the brain, an international group of scientists led by HBP researcher Gustavo Deco of the Pompeu Fabra University in Barcelona and by Morten L. Kringelbach (Arhus and Oxford Uiversity), have developed an innovative method to improve the precision of brain stimulation.
More

Hidden Dynamics Detected in Neuronal Networks

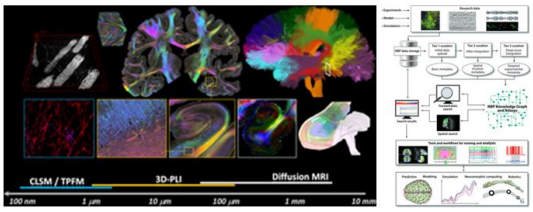


Neuronal networks in the brain can process information particularly well when they are close to a critical point – or so researchers had assumed based on theoretical considerations. However measurements revealed much fewer indicators of such states than expected. HBP scientists now show that neuronal networks can assume a second, previously unknown critical mode whose hidden dynamics are almost impossible to measure with conventional methods.
More

Second Generation SpiNNaker Neuromorphic Supercomputer to be Built at TU Dresden

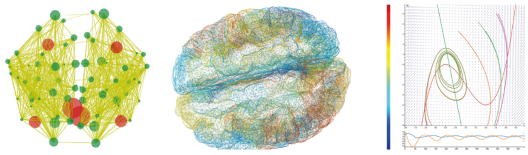
Dresden will be the site of the first super computer that can simulate brain-size networks in real time, SpiNNaker 2. Last Friday, 20th September, Saxon State Minister for Science, Dr. Eva-Maria Stange delivered a funding letter of 8 Mio Euro to Prof. Christian Mayr at the TU. SpiNNaker 2 will be deployed in Dresden as project “SpiNNcloud”.
More

The HBP: driving synergy between neuroscience and technology



In a new PLOS Biology community page, leading scientists from the Human Brain Project give an overview of the project's science and infrastructure approach, as well as opportunities for the scientific community to make use of novel computational ressources for neuroscience.
More

TVB-NEST multiscale simulation now available on Human Brain Project Collab Platform



A new simulation tool links micro-scale and whole brain simulations to bridge between different levels of description. The TVB-NEST multiscale simulation tool is available on the HBP Collab platform.
More

Selected recent papers

Slow-wave activity in the S1HL cortex is contributed by different layer-specific field potential sources during development. Journal of Neuroscience Sept 23

Red blood cells stabilize flow in brain microvascular networks. PLOS Computational Biology. Aug 30

Linking Molecular Pathways and Large-Scale Computational Modeling to Assess Candidate Disease Mechanisms and Pharmacodynamics in Alzheimer's Disease. Front. Comput. Neurosci Aug 13

Holistic recollection via pattern completion involves hippocampal subfield CA3. Journal of Neuroscience Aug 12

Pathway-Specific Genetic Risk for Alzheimer's Disease Differentiates Regional Patterns of Cortical Atrophy in Older Adults. Cerebral Cortex Aug 09

Ventral midbrain stimulation induces perceptual learning and cortical plasticity in primates. Nature Communications Aug 9

In Focus: HBP Curation support for neuroscience data

Help us realize the promise of Open Data!

If you are ready to publish your data, and want to maximize the impact of your research by making it available to the broader scientific community you need to know what the HBP Data Curation team can do for you! The recently launched HBP Curation Support Service offers data and metadata management services, along-side a long-term data storage solution. HBP Curation Support Service can ensure your published data is FAIR - Findable, Accessible, Interoperable and Re-usable. Be FAIR with your data and contact us at: curation-support@humanbrainproject.eu

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Project News

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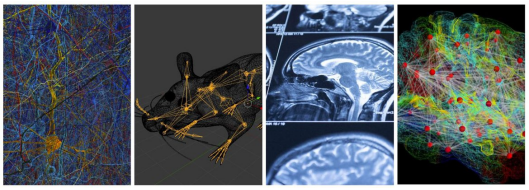
4 new Calls for Expression of Interest



4 new calls CEoIs are now open for projects to directly contribute to the development of the research Infrastructure (EBRAINS) and increase the scope of its application in terms of innovation, neuroscience and clinical research. Find the thematic scope, funding sum and timeframe here.

Find us at SFN 2019!

The Human Brain Project will be exhibiting at this year's SfN Annual Meeting in Chicago, USA, from Oct 19-23. At booth #2125, we will be presenting demos and posters involving various researchers from the project. Stop by and also visit our friends and booth neighbours The Virtual Brain, INCF and NIF! For more information, please contact outreach@humanbrainproject.eu

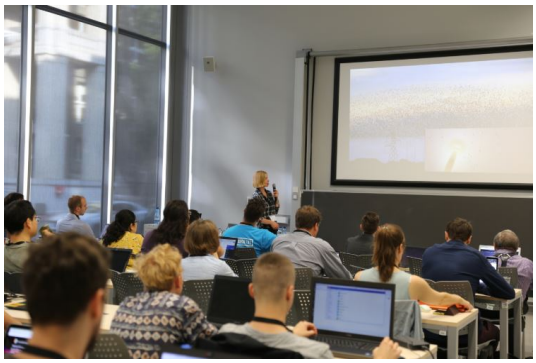
Call "Best Concepts and Ideas for Diversity in Research and Management"

The HBP increases the visibility of research, differentiated gender or further diversity traits. Additionally, the HBP want to implement ideas improving equal opportunities. The most outstanding and promising concepts will be presented at the HBP Summit to a large scientific audience and representatives of the European Commission. Registration and travel expenses of award winners will be covered for the Summit or a conference or training of your choice. The call is open for all researchers and managers until 14 October 2019 17:00 CET More

Diversity and ethics perspectives on the intersection of neuroscience and technology

Writing for the Neuroethics Blog, HBP's equal opportunities and diversity coordinator Karin Grasenik looks at aspects of diversity in today's brain research and technology developments. Find her post "Same, same – or different? Common challenges in neuroscience, AI, medical informatics, robotics and new insights with diversity & ethics" here

Human Brain Project at INCF's Neuroinformatics 2019 In Warsaw



At the annual assembly of the International Neuroinformatics Coordinating Facility (INCF) Warsaw, Poland, researchers from the Human Brain Project presented the science, tools and services developed in the HBP through numerous workshops, talks and hands-on demos. More

Award

Congratulations to Alice Geminiani for winning the Massimo Grattarola award for the best PhD thesis in Italy in the field of neuroengineering and biotechnology. The research work described in her thesis was developed within the HBP Partnering Project CerebNEST at Politecnico di Milano, in collaboration with Prof. Egidio D'Angelo and his lab at the University of Pavia.

HBP in the media

Technologynetworks.com (USA): Hidden Dynamics Detected in Neuronal Networks

24heures (Switzerland): L'EPFL n'est plus seule à la barre de l'ambitieux Human Brain

ntv.de (Germany): TU Dresden bekommt acht Millionen Euro für Supercomputer

Deutschlandfunk Nova (Germany): Human Brain Project: 3D-Gehirn mit Milliarden Nervenzellen

Silicon Saxony (Germany): Fraunhofer IZM: Human Brain Project – EU Flagship

Jerusalem Post (Israel): Stepping inside the Mind: Da Vinci and the world of the human brain

Publico (Spain): HUMAN BRAIN PROJECT: La nueva generación de robots tendrá manos más humanas

Sapo.pt (Portugal): Tecnologias do futuro há muitas. Estas vão funcionar a longo prazo

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Events and Dates

October and beyond

HBP Training Course: The Brain Simulation Platform of the Human Brain Project
Biomedicum Helsinki, Helsinki, Finland
Oct. 7, 2019 at 09:00 – Oct. 8, 2019 at 18:00
This short course will introduce participants to the Brain Simulation Platform (BSP) of the Human Brain Project (HBP), with the main aim to extend its access to the average user from a variety of communities in the field of Computational Neuroscience.

NSG and HPAC – Large Scale Simulations and Data Processing
Location in downtown Chicago close to the Chicago Convention Center
Oct. 19, 2019 at 08:30 – Oct. 19, 2019 at 12:30
The Neuroscience Gateway (NSG) team jointly with the High Performance Analytics and Computing (HPAC) of the Human Brain Project, will organize a workshop titled “NSG and HPAC – Large Scale Simulations and Data Processing” on Saturday, 19 October 2019, 8:30am – 12:30pm at a location in downtown Chicago close to the Chicago Convention Center, location of Society for Neuroscience (SfN) Annual Meeting.

Roles and Mechanisms of Cortical Feedback
74 rue du Faubourg Saint-Antoine, 75012 Paris, FRANCE
Nov. 6, 2019 – Nov. 7, 2019
Computational models inspired by the architecture of the visual cortex have recently taken a huge leap, beating humans in many image analysis tasks. Still most of these models are based on pure feedforward connectivity, while half of the connections between cortical areas are running in the feedback directions. A major question therefore remains what the additional value of feedback connections could be, and how to properly implement them in a computational model. This workshop bring together computational as well as experimental neuroscientists to attempt to provide the state-of-the-art on the topic.

CodeJam#10
Marsilius-College, Heidelberg University, Heidelberg, Germany
Nov. 26, 2019 at 09:00 – Nov. 28, 2019 at 18:00
This year's CodeJam theme is "Integration and Workflows". It is aimed to gather scientists, students and engineers from different disciplines collaborating to build a highly integrated research infrastructure for computation-based neuroscience, and to show how this infrastructure can be used to model brain circuits, behaviour and learning, develop novel bio-inspired computing systems, and help discover new drugs for neurological disorders.

BrainModes Conference
Pokhara, Nepal
Dec. 12-13
BrainModes is an annual meeting that brings together international experts from various disciplines and seeks to explore innovative means of understanding complex brain activity and multimodal neuroscience data sets. This year's meeting will focus on exploring "Unified Principles of Brain Connectivity and Dynamics". It will be held in Pokhara, Nepal. The main conference will be on December 12 - 13. The pre-conference course, intended to

provide participants with the foundations of neuroimaging and computational neuroscience, will be offered on December 11. For both of these events, the total number of participants will be limited to 100.

Find further events at: https://www.humanbrainproject.eu/en/follow-hbp/events/
