CONFIDENTIAL: PRESS RELEASE

(embargo – 12:00 12/12/2021)

Winners of the 2021 Misha Mahowald Prize for Neuromorphic Engineering (MMP)

The 2021 Misha Mahowald Prize has been awarded to two teams of researchers who have used neuromorphic principles to build devices that help humans with disabilities improve sensory and motor interaction with the world.

The Bionic Arm Team developed neural interfaces that control an arm prosthesis for amputees. The sensory interface restores sensory feedback to the brain, and so enables it to provide appropriate motor commands to the prosthesis via a motor interface. Amputees learned to control their bionic arm and developed a sense of touch as if it were their own arm.

The project is described in: "Biomimetic intraneural sensory feedback enhances sensation naturalness, tactile sensitivity, and manual dexterity in a bidirectional prosthesis." *Neuron* (2018) 100.1: 37-45, https://doi.org/10.1016/j.neuron.2018.08.033

The Bionic Arm Team members are: Giacomo Valle (EPFL, Lausanne & Scuola Superiore Sant'Anna, Pisa), Alberto Mazzoni (Scuola Superiore Sant'Anna, Pisa), Francesco Iberite (Scuola Superiore Sant'Anna, Pisa), Edoardo D'Anna (EPFL, Lausanne), Ivo Strauss (EPFL, Lausanne), Giuseppe Granata (Catholic University of The Sacred Heart), Marco Controzzi (Scuola Superiore Sant'Anna, Pisa), Francesco Clemente (Scuola Superiore Sant'Anna, Pisa), Giulio Rognini (EPFL, Lausanne), Christian Cipriani (Scuola Superiore Sant'Anna, Pisa), Thomas Stieglitz (University of Freiburg, Freiburg), Francesco Maria Petrini (EPFL, Lausanne), Paolo Maria Rossini (Catholic University of The Sacred Heart, Rome), and Silvestro Micera (Principal Investigator, EPFL, Lausanne & Scuola Superiore Sant'Anna, Pisa)

The Telluride Auditory Attention Team used electrical signals from the scalp to measure auditory attention selection and performance of subjects in a multi-speaker environment. Their results will help hearing-impaired persons to focus attention on a particular speaker under 'cocktail party' conditions. This work originated at the 2012 Telluride Neuromorphic Engineering Cognition Workshop and led to the multi-partner institution Cognitively Controlled Hearing Aid project funded by the European Union, which successfully demonstrated a real-time Auditory Attention Decoding system.

The project is described in: “Attentional Selection in a Cocktail Party Environment Can Be Decoded from Single-Trial EEG” *Cerebral Cortex*, (2015) 25:1697–1706, https://doi.org/10.1093/cercor/bht355

The Auditory Attention Team members are: Edmund Lalor (Principal Investigator, University of Rochester), James O'Sullivan (Trinity College, Dublin), Alan Power (Trinity College, Dublin and University of Cambridge), Nima Mesgarani (University of California, San Francisco), Siddharth Rajaram (Boston University), John Foxe (University of Rochester), Barbara Shinn-Cunningham (Boston University), Malcolm Slaney (Google Research) and Shihab Shamma (University of Maryland).

The Jury found that these two submissions were tied for first place, and have recommended that the teams receive separate prize citations, but share the prize money.

Result of the 2021 Mahowald Early Career Award (MECA)

Unfortunately, despite a number of impressive submissions, the Jury was unable to make an award in this first year of the MECA. The Jury reports that many of the submissions did not observe the focus on Neuromorphic Engineering, nor did they fulfill the technical requirements for the submitted document.

We strongly encourage re-submission of improved projects for the 2022 MECA, provided that the conditions on ‘Early Career’ are satisfied.

Misha Mahowald Prize | IniLabs AG
prize@mahowaldprize.org
www.mahowaldprize.org