Hanse-Wissenschaftskolleg
Institute for Advanced Study

Workshop

Cortical Prostheses – Interdisciplinary Research Towards Artificial Vision for the Blind

Delmenhorst, 19 – 22 September 2023

Organizer:
Dr. David Rotermund
Dr. Udo Ernst
University of Bremen

Funded by:

DFG Deutsche Forschungsgemeinschaft German Research Foundation

BWB Stiftung Bremer Wertpapierbörse

Hanse-Wissenschaftskolleg Institute for Advanced Study

Program

Venue:

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Tuesday, September 19, 2023 – Day 1

10:00 – 10:15	**Welcome**
10:15 – 11:00	*Shelley I. Fried* Towards the development of a micro-coil based cortical visual prosthesis
11:00 – 11:30	*COFFEE BREAK*
11:30 – 12:15	*Ione Fine* Pulse trains to percepts: Using virtual patients to describe the perceptual effects of human visual cortical stimulation
12:15 – 13:00	*Avi Caspi* Eye tracking in cortical visual prosthesis – from theory to practice
13:00 – 14:30	*LUNCH*
14:30 – 15:15	Poster Session
15:15 – 16:00	*Carlos Ponce* Estimating the capacity of neuronal population encoding via image reconstructions
16:00 – 16:30	*COFFEE BREAK*
16:30 – 17:30	*Pieter Roelfsema* Visual perception and consciousness and their restoration when the eyes fail
17:30 – 18:00	Buffer
18:30 – 19:30	*DINNER*

Wednesday, September 20, 2023 – Day 2

10:00 – 10:45	*Fabian Sinz* Exploring the Visual System with Functional Digital Twins and Inception Loops
10:45 – 11:30	*Umut Guclu* Neural Coding and Neuroprosthetics with Deep Learning and Synthetic Reality
11:30 – 12:00	*COFFEE BREAK*
12:00 – 12:45	*Bogdan Raducanu* Chips to neurons and back: electronic circuits for neural recording and stimulation
12:45 – 14:15	*LUNCH*
14:15 – 15:00	*Daniel Yoshor* Implementing a Visual Cortical Prosthetic: Advances and Challenges
15:00 – 15:45	*Diego Ghezzi* High-density wide-area cortical visual prosthesis
15:45 – 16:15	*COFFEE BREAK*
16:15 – 17:00	*Arto Nurmikko (Zoom)* Wireless Networks of Implanted Microchips for Distributed Cortical Sensing and Stimulation
17:00 – 18:00	Socials (Nordwolle & Co)

Thursday, September 21, 2023 – Day 3

10:00 – 10:35	*Udo Ernst* I-See - Evaluating novel approaches for constructing visual cortical prostheses
10:35 – 11:10	*Dirk Jancke* Probing electrical brain stimulation in genetically modified mice
11:10 – 11:50	*COFFEE BREAK*
11:50 – 12:25	*Christopher Pack* Design considerations for an extrastriate visual cortical prosthetic
12:25 – 13:00	*Michael Herzog (+ Elsa Scialom)* A psychophysical approach to object rendering in future V4 prostheses
13:00 – 14:30	*LUNCH*
14:30 – 15:15	*Theo Doll* Additively Fabricated Cortical Electrodes – a materials challenge
15:15 – 16:00	*Andreas Schander* Development of neural probes for chronic recording and electrical stimulation
16:00 – 16:30	*COFFEE*
16:30 – 17:15	*Gislin Dagnelie* Early functional outcomes for the first human with the Intracortical Visual Prosthesis (ICVP)
17:15 – 18:00	*Michael Beyeler (Zoom)* Human-in-the-Loop Optimization of Simulated Prosthetic Vision
18:00 – 19:30	*DINNER*
19:30 – 21:30	Fireplace

Friday, September 22, 2023 – Day 3

10:00 – 11:00	*Eduardo Fernandez Jover* Towards an advanced cortical visual neuroprosthesis based on intracortical microelectrodes
11:00 – 11:30	*COFFEE BREAK*
11:30 – 12:15	*Michael Schmid* Influence of visual cortex stimulation on perception: Insights from experiments in non-human primates
12:15 – 13:00	*Anna Wang Roe (Zoom)* A novel interface for cortical columnar neuromodulation with multi-point infrared neural stimulation
13:00 – 14:30	*LUNCH*
14:30 – 15:00	Buffer
15:00	*PUBLIC FORUM*