Royal Society Summit on Neural Interfaces, 13 and 14 September, 2023

Day 1 – Science and Applications of Neural Interface Technologies

Time	Session
8:30 to 9:20	Registration and refreshments (tea, coffee and pastries)
9:20 to 9:30	Welcome and opening remarks *Sir Adrian Smith PRS*
9:30 to 10:30	Keynote address: Introduction to neural interface technologies *Professor Tim Denison, University of Oxford*
10:30 to 11:00	Refreshments break
11:00 to 12:30	Session 1: Medical applications of neural interfaces *Chair: Professor Valerie Voon, University of Cambridge* *Speakers:* *Professor Tamar Makin, University of Cambridge* *Dr Andres Lozano, University of Toronto* *Victor Pikov, CEO, Medipace* *Dr Ioana Grigoras, University of Oxford* *This session will explore current and emerging medical applications of neural interfaces, including deep brain stimulation, prostheses, and implantable devices.*
12:30 to 13:30	Lunch (City of London Rooms and the Marble Hall)
13:30 to 15:00	Session 2: Non-medical applications of neural interfaces *Chair: Professor Dave Delpy FRS* *Speakers:* *Professor Margaret Kosal, Georgia Institute of Technology* *Professor Penelope Lewis, Cardiff University* *Professor Damien Coyle, University of Bath* *Martin Dinov, CEO, Maaind* *This session will explore current and emerging non-medical applications of neural interfaces, including in gaming, sleep engineering, automobiles, and defence.*
15:00 to 15:30	Refreshments break (The Marble Hall)

Time	Session
15:30 to 16:45	Session 3: Emerging and future applications of neural interfaces *Chair: Professor Daniele Faccio, University of Glasgow* *Speakers:* *Dr Jörn Rickert, CEO, Neudio* *Professor Mikhail Shapiro, California Institute of Technology* *Dr Mahnaz Arvaneh, University of Sheffield* *Dr Will Muirhead, The Francis Crick Institute* *This session will explore emerging and future applications of neural interfaces including next-generation active implants, bioacoustics, and brain computer interfaces.*
16:45 to 17:00	Day 1: Reflections and wrap up *Professor Tim Constandinou, Imperial College London*
17:00 to 17:30	Lightning talks *This session will feature quick presentations from a range of speakers from startups and others in the neural interface ecosystem including BIOS, Charco Neurotech, and Google.*
17:30 to 20:00	Drinks, dinner, and Neural Technologies Exhibition *Startups and others in the neural interface ecosystem will be participating in a Neural Technologies Exhibition, giving live technology demos, exhibiting their work, or running interactive stalls.*

Day 2 – Ethical, Societal and Governance Considerations of Neural Interface Technologies

Time	Session
8:30 to 9:30	Registration and refreshments (tea, coffee and pastries served)
9:30 to 10:30	Introduction to the ethics of neural interface technologies *Speakers:* *Professor Nita Farahany, Duke University School of Law* *Dr Sarah Chan, University of Edinburgh*
10:30 to 11:30	Session 1: Abandonment *Chair: Dr Michael Okun, University of Florida* *Speakers:*

Tim Marjenin, Vice President, Neurology Regulatory Affairs, MCRA

Professor Frederic Gilbert, University of Tasmania

Dr Sean Doherty, University College London

Dr Jinendra Ekanayake, Brighton and Sussex Medical School

This panel discussion will focus on the ethical issue of abandonment – what happens if a company maintaining an implanted medical device goes bust? How do patients receiving an experimental device as part of clinical trial respond when that device must be removed? What regulatory and industry perspectives must be considered when seeking to address the issue?

11:30 to 12:00	Refreshments break
12:00 to 13:00	Session 2: Designing inclusive devices

Chair: Professor Clare Elwell, University College London

Speakers:

Dr Marcello Ienca, EPFL, TUM

Carolina Aguilar, CEO, INBRAIN

Conor Russomanno, CEO, OpenBCI

Abigail Oppong, Ghana NLP

This panel discussion will focus on the question and issues around how to design devices that work equally well on everyone. It will consider ethical considerations, industry perspectives, and the role of open-source tools in addressing the issue.

13:00 to 14:00	Lunch
14:00 to 15:00	Session 3: Privacy, liberty and neural interfaces

Chair: Professor Nita Farahany, Duke University School of Law

Speakers:

Katja Bego, Group Manager, Information Commissioner's Office

Dr Gerwin Schalk, Laboratory Director, Chen Frontier Lab

Professor Andrew Jackson, Newcastle University

This panel discussion will consider challenges to privacy and liberty raised by novel developments in neural interface technologies. It will consider perspectives from data protection regulation and those researching and developing such technologies, including to recreate songs by reading brain activity.

15:00 to 15:30	Refreshments break

15:30 to 16:30	Governance of neural interface technologies
	Chair: Siobhan O'Sullivan, Executive Director, Royal Irish Academy
	Speakers:
	Dr Andy Greenfield, Regulatory Horizons Council
	Dr Guido Girardi, former President of the Senate of Chile
	Hilary Sutcliffe, Director, Society Inside
	Dr Laura Kreiling, OECD
	This panel discussion will explore what governance mechanisms are currently in place for neural interface devices, and what the priorities should be for governing the field in the future.
16:30 to 16:45	Day 2: Reflections and wrap up
	Dr Sarah Chan, University of Edinburgh
16:45 to 17:00	Summit reflections and call to action
	Professor Tim Constandinou, Imperial College London