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EDITORIAL

Introduction to the proceedings of the CNS*2022 meeting

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Welcome from the President

As the president of the Organization for Computational Neurosciences and someone who has attended almost every CNS meeting since I was a PhD student, I am particularly pleased to introduce the publication of abstracts from the CNS*2022 conference in Melbourne in the Journal of Computational Neuroscience. The Journal of Computational Neuroscience has a long-standing association with OCNS, having been co-founded by Jim Bower who also played a seminal role in establishing our annual CNS meeting. The status of the Journal of Computational Neuroscience as the official OCNS publication is reflected by reduced personal journal subscription rates for OCNS members. Like the CNS meeting, the Journal of Computational Neuroscience encourages approaches that combine theoretical, computational, and experimental work in the neurosciences, and it provides a natural home for the publication of our meeting abstracts.
Volker Steuber, OCNS President

Foreword from the editors

We are delighted to introduce the Proceedings of the CNS*2022 meeting, which was held in Melbourne, Australia. Due to the Covid-19 pandemic, this was the first in-person CNS meeting since CNS*2019 in Barcelona, and the first time that the meeting has been held in the Southern Hemisphere. While the meeting would not have been possible without the contributions of many people working tirelessly, we would like to thank here particularly the members of the Program Committee for their help in selecting the speakers and presenters. The abstracts corresponding to their talks and posters are what you find collected here.

We hosted four keynote speakers: Michael Breakspear, Joseph Lizier, Kristin Sellers, and Tara Hamilton. They shared their insights about the metabolic demands of brain activity, the space-time dynamics of information processing, identifying network structure before and during therapeutic deep brain stimulation, and commercial opportunities in computational neuroscience. From the submissions, we also selected four featured orals as particularly noteworthy. They discussed neural adaptation to light dynamics through a biophysical phototransduction frontend, the heterogeneity of regional grey matter volume abnormalities in psychiatric disorders, near-infrared laser stimulation of single neurons, and cognitive loads moving hippocampal networks closer to criticality.

An additional 18 submissions were selected for shorter oral presentation in the plenary sessions, touching subjects such as designing "infomorphic" neurons, interval variability in CPGs, temporal scaling of neural representations, manifold discovery in spike trains, brain waves and spectral abnormalities in Alzheimer's Disease, spatial and motion selectivity in a V1 column, kinematic intention encoding and readout, context-dependent multisensory integration, mapping the functional delays of brain connections, perturbation-based biomarkers and random matrix connectivity analyses in epilepsy, evolutionary trade-offs concerning neural dynamic range, avalanche transitions informing brain-computer interfaces, fast learning with realistically slow neurons, and adapting reward functions in temporal difference learning. We were also pleased by the quality of the 120 presented posters, which drew a strong attendance and sparked lively discussions. The flourishing of computational neuroscience was on full display.

We are looking forward to seeing everyone at the CNS*2023 meeting in Leipzig with an equally exciting program, and hopefully again in person!

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