Organization For Computational Neurosciences

@CNSOrg   @cns_ocns   @ocns9820   @OCNS

Message from the President

Thomas Nowotny, Professor of Informatics, University of Sussex, UK

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CNS*2024 Natal: Report from Local Organizer

Cesar

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CNS*2024 Natal: Messages from Volunteers

Messages from volunteers at CNS*2024 Natal

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CNS*2024 Natal: Pictures

See all the pictures online here `https://photos.app.goo.gl/YtpTN6ui4ap6P8Bz6.`

CNS*2024 Natal: From the Program Committee Chair

Julie Haas, Lehigh University, USA

Many thanks to Axel Hutt (Deputy Chair), Sang Wan Lee, Ian Stevenson and Nassi Papoutsi for their service, and extend a warm welcome to Andre Peterson, Masanori Shimono, Yunliang Zang and Arezoo Alizadeh. We're currently working on selecting keynotes for CNS*2025 Florence, and look forward to a robust round of abstract reviewing in spring.

CNS*2024 Natal: Travel Awards

Michelle

A limited number of merit based travel awards, given based on review of summaries by the program committee, are available to presenting students and postdocs who are OCNS members. Women and members of other historically marginalized communities in Science, Technology, Engineering, and Mathematics are particularly encouraged to apply. Applications for travel grants are to be submitted during the abstract submission process at the annual OCNS conference.

This year's travel awards were competitive, with many more excellent applicants than available funds. We were pleased to award 19 travel grants to participants from all over the world:

- Flavio Rusch (Brazil)
- Cecilia Jarne (Argentina)
- Paolo Protachevicz (Brazil)
- Fernando Fagundes Ferreira (Brazil)
- Pamela Alejandra Illescas Maldonado (Chile)
- Lavinia Mitiko Takarabe (Brazil)
- Forough Habibollahi Saatlou (Australia)
- Fabio Pioggio (Italy)
- Richard Gast (USA)
- Alexandra Chatzikalymniou (USA)
- Ankur Sinha (UK)
- Christopher Earl (USA)
- Anaelle De Worm (Belgium)
- Ferdinand Tixidre (France)
- Camille Mazzara (Italy)
- Lindsay Stolting (USA)
- Elnaz Nemati (Australia)
- Dirk Goldschmitt (UK)
- Eleonora Bernasconi (UK)

Quotes from a few travel awardees:

Flavio Rusch (Brazil)

Attending CNS*2024 was an invaluable experience in my career as a physicist working in computational neuroscience. It provided me the opportunity to present my research to leading figures in the field, engage in discussions, and expand my network of collaborations. I am deeply grateful to OCNS for the travel award, as it made this opportunity possible.
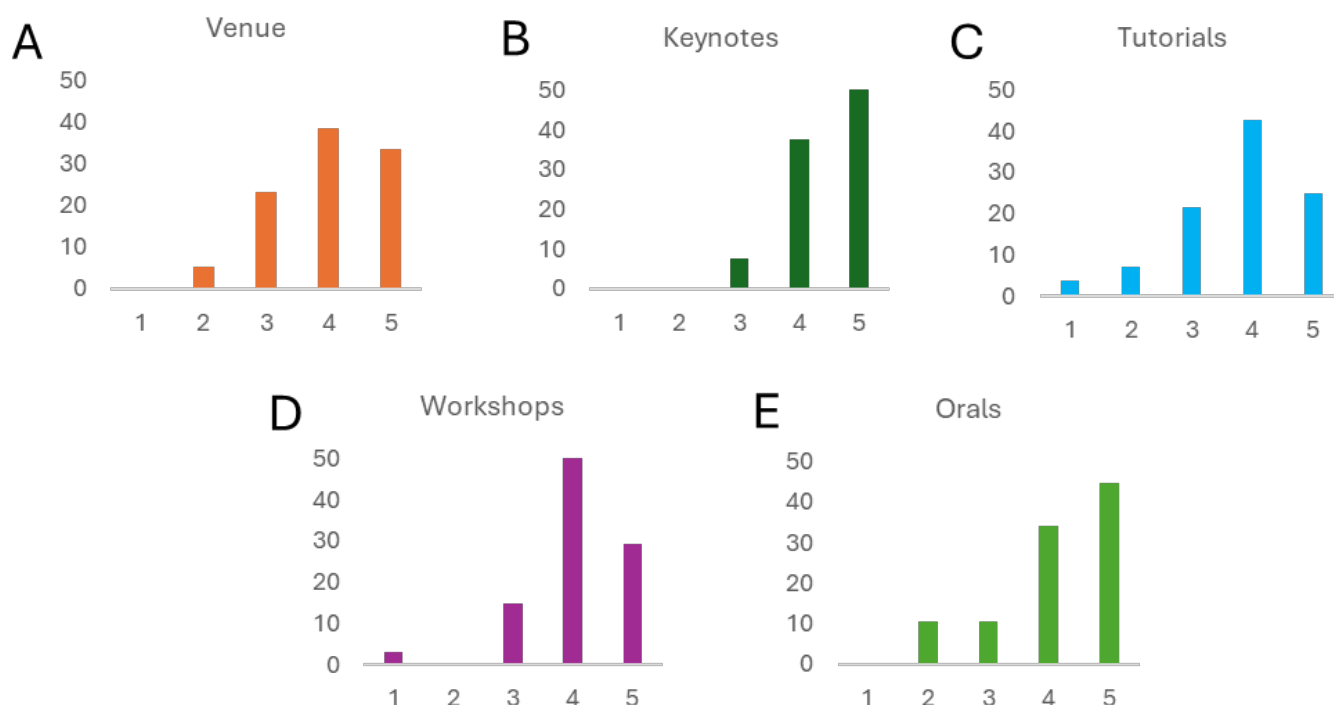
CNS*2024 Natal: Feedback form Summary

Figure 1: Summary of participant feedback, CNS*2024

We received 42 responses on the Participant Feedback Survey distributed at the end of CNS*2024. Overall, the feedback has been positive. The data is presented in Figure 1 above, with 5 being the highest rating.

Most people have enjoyed the venue: 71% gave 4 or 5 rating in this category (Figure 1 A). Attendees commented highly on the quality of the keynote speakers: 55% gave the highest (5) rating in this category (Figure 1 B). The common theme was a commendation to the local organizers for catering, efficiency, and airport pickup; while the AV, staff English proficiency, and the small space allocated for posters received mostly negative comments.

Tutorials had mixed reviews: 10% of the attendees submitted the rating less than average satisfaction (1 or 2), while most people, 42%, gave the rating 4 (Figure 1 C). No comments were provided.

The attendance at the workshops varied. Some workshops received very high praise; 80% of people gave ratings 4 or 5, with comments such as "very interesting topics", "amazing", "excellent session" (Figure 1 D). While other workshops left attendees dissatisfied, with suggestions to reduce the number of parallel sessions to boost the attendance.

Overall, 79% attendees enjoyed oral presentations and gave the ratings 4 or 5, while 21% rated the presentation as satisfactory (3) or below (2), Figure 1 E. Positive comments included "OCNS is superb in supporting young scientist's careers". Suggestions for improvements included more talks on data-driven, deep learning-based approaches. We thank everybody for their feedback that will be taken into account when organizing CNS*2025.

CNS*2025 Florence

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Initiatives: Software Working Group

Marcel Stimberg
Ankur Sinha

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Initiatives: Mentoring Program Updates

Eirini

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OCNS: Member Updates: Scientific Items

Updates of scientific interest from OCNS members

The name of the OCNS member that submitted the entry is highlighted in **bold**.

[1] Pake Melland and **Rodica Curtu**. "Attractor-Like Dynamics Extracted from Human Electrocorticographic Recordings Underlie Computational Principles of Auditory Bistable Perception". In: *Journal of Neuroscience* 43.18 (2023), pp. 3294–3311. ISSN: 0270-6474. DOI: 10.1523/JNEUROSCI.1531-22.2023. eprint: https://www.jneurosci.org/content/43/18/3294.full.pdf. URL: https://www.jneurosci.org/content/43/18/3294.

[2] Benjamin Ellenberger, Paul Haider, Jakob Jordan, Kevin Max, Ismael Jaras, Laura Kriener, Federico Benitez, and **Mihai A. Petrovici**. "Backpropagation through space, time, and the brain". In: *arXiv preprint arXiv:2403.16933* (2024). URL: https://doi.org/10.48550/arXiv.2403.16933.

[3] **Max Garagnani**. "On the ability of standard and brain-constrained deep neural networks to support cognitive superposition: a position paper". In: *Cognitive Neurodynamics* (2024). ISSN: 1871-4099. DOI: 10.1007/s11571-023-10061-1. URL: https://doi.org/10.1007/s11571-023-10061-1.

[4] Frank Gelens, Juho Äijälä, Louis Roberts, Misako Komatsu, Cem Uran, Michael A. Jensen, Kai J. Miller, Robin A. A. Ince, **Max Garagnani**, Martin Vinck, and Andres Canales-Johnson. "Distributed representations of prediction error signals across the cortical hierarchy are synergistic". In: *Nature Communications* 15.1 (2024), p. 3941. ISSN: 2041-1723. DOI: 10.1038/s41467-024-48329-7. URL: https://doi.org/10.1038/s41467-024-48329-7.

[5] Kevin Max, Laura Kriener, Garibaldi Pineda García, Thomas Nowotny, Ismael Jaras, Walter Senn, and **Mihai A. Petrovici**. "Learning efficient backprojections across cortical hierarchies in real time". In: *Nature Machine Intelligence* (2024), pp. 1–12. URL: https://doi.org/10.1038/s42256-024-00845-3.

[6] **Aitor Morales-Gregorio**, Anno C. Kurth, Junji Ito, Alexander Kleinjohann, Frédéric V. Barthélemy, Thomas Brochier, Sonja Grün, and Sacha J. van Albada. "Neural manifolds in V1 change with top-down signals from V4 targeting the foveal region". In: *Cell Reports* 43.7 (2024), p. 114371. ISSN: 2211-1247. DOI: https://doi.org/10.1016/j.celrep.2024.114371. URL: https://www.sciencedirect.com/science/article/pii/S2211124724006995.

[7] Sue L. Rhamidda, **Mauricio Girardi-Schappo**, and Osame Kinouchi. "Optimal input reverberation and homeostatic self-organization toward the edge of synchronization". In: *Chaos: An Interdisciplinary Journal of Nonlinear Science* 34.5 (May 2024). ISSN: 1089-7682. DOI: 10.1063/5.0202743.

[8] **Ankur Sinha**, Padraig Gleeson, Bóris Marin, Salvador Dura-Bernal, Sotirios Panagiotou, Sharon Crook, Matteo Cantarelli, Robert C. Cannon, Andrew P. Davison, Harsha Gurnani, and R. Angus Silver. "The NeuroML ecosystem for standardized multi-scale modeling in neuroscience". In: *eLife* (May 2024). DOI: 10.7554/elife.95135.1. URL: http://dx.doi.org/10.7554/eLife.95135.1.

[9] Jiayun Xu, **Mauricio Girardi-Schappo**, Jean-Claude Béïque, André Longtin, and Leonard Maler. "Shortcutting from self-motion signals: quantifying trajectories and active sensing in an open maze". In: (2024). DOI: 10.7554/elife.95764.2. URL: http://dx.doi.org/10.7554/eLife.95764.2.

OCNS: Member Updates: Community Development

Updates related to community development from OCNS members

- **The Capo Caccia Worskhops toward Neuromorphic Intelligence**

  Submitted by: Mihai A Petrovici

  `https://capocaccia.cc/en/event/ccnw24/landing-page/`

  The goal of the CCNW workshops is to promote the neuromorphic approach to designing technologies, establish an international community, and to encourage collaboration amongst small groups, in order to achieve the kind of technical advances which could only otherwise happen in well-funded industrial labs.

  The CCNW has an open format, whose intention is to encourage creativity and exploration of ideas and projects in a relaxed and intellectually open environment. Although there is a skeleton program that sets a default route through the two weeks, ad hoc deviations from or elaborations of this basic program are encouraged. Discussion groups and projects arise dynamically. There are no formal lectures. Instead, the morning consist of two 1.5 hr discussion sessions in which a few discussants will make short contributions to the topics in order to ignite more general interaction. Although the sessions of the skeleton program have assigned moderators and discussants, these persons should also be seen as defaults. Whiteboards and overhead tablets are available for drawings. Formal presentations with prepared media (such as Powerpoint slides) are strictly forbidden. The daily program includes a late afternoon sports break, and happy hour.

- **The Lu.i educational neurons**

  Submitted by: Mihai A Petrovici

  `https://physiologie.unibe.ch/~petrovici/group/lui.aspx`

  With an increasing presence of science throughout all parts of society, there is a rising expectation for researchers to effectively communicate their work and, equally, for teachers to discuss contemporary findings in their classrooms. While the community can resort to an established set of teaching aids for the fundamental concepts of most natural sciences, there is a need for similarly illustrative experiments and demonstrators in neuroscience. We therefore introduce Lu.i: a parametrizable electronic implementation of the leaky-integrate-and-fire neuron model in an engaging form factor. These palm-sized neurons can be used to visualize and experience the dynamics of individual cells and small spiking neural networks. When stimulated with real or simulated sensory input, Lu.i demonstrates brain-inspired information processing in the hands of a student. As such, it is actively used at workshops, in classrooms, and for science communication. As a versatile tool for teaching and outreach, Lu.i nurtures the comprehension of neuroscience research and neuromorphic engineering among future generations of scientists and in the general public.

- **Neuroscience Gateway (NSG)**

  Submitted by: Amitava Majumdar

  `https://www.nsgportal.org`

  NSG project provides free and open access to supercomputing resources. NSG enables modeling, simulation and data processing (e.g. EEG, MEG, fMRI etc.) research in neuroscience by lowering the administrative and technical barriers that currently make it difficult for investigators to use large scale computing resources. It provides access to popular neuroscience tools, pipelines, data processing software and libraries.

Messages from our Sponsors

Short messages from OCNS sponsors

Metacell

Thank you to OCNS for hosting an excellent annual meeting, and to everyone who connected with MetaCell, attended our presentation and joined our event. It was great catching up with friends and partners in Natal, and we were proud sponsors of the meeting!

If you're interested in new ways to standardize, visualize, share, and build your computational models, please visit `metacell.us` and get in touch with our team.

INCF Updates

Helena/Matthew

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