

The SpiNNaker2 Award

The SpiNNaker2 Award offers a total of €80 000, split into a €40 000 prize each to the best two project proposals submitted that will demonstrate exciting and novel applications of the SpiNNaker2 neuromorphic hardware system [1, 2, 3]. Proposals may be submitted by individuals or research groups from academia or industry worldwide, and will be judged on the ambition of the proposed application, the feasibility of the plan, and the track record of the proposer(s).

Following the design philosophy of the SpiNNaker2 systems, proposals should focus on real-time/closed loop interaction or should be motivated by a latency and energy-constrained setting. Usage of the hardware accelerator blocks [4,5] in SpiNNaker2 is recommended. The realization of proposed projects in a one-year time frame should be sketched. Award applications could include, but are not limited to:

- Multi-scale brain models
- Mobile/robotics applications
- Bio signal processing
- Edge AI
- Novel combined artificial and spiking neural network processing paradigms

The submission deadline for the award is 00:00 UTC 30th November 2020. A project description in English of up to two A4 pages (10pt font, single spacing) is required and should include the following:

- Applicant(s) and affiliation(s) list
- Contact person information
- Brief description of own prior work and state of the art
- Description of your concept, its novelty and its potential impact
- Timeline and usage of funds
- Brief statement on dissemination

This award is sponsored by the "Dr. Stefan Weiße Stiftung" in cooperation with the Chair of Highly-Parallel VLSI Systems and Neuro-Microelectronics, TU Dresden, Germany (<https://tu-dresden.de/ing/elektrotechnik/iee/hpsn/>). The award selection is handled by a scientific jury headed by Christian Mayr (TU Dresden) and Steve Furber (University of Manchester). The selection process is by consensus vote. If no consensus is reached no award is made. The winner will be announced in January 2021. After a period of 12 months the winner is obliged to submit a final report and present the outcome at a SpiNNaker2 Workshop. During the project execution, SpiNNaker2 hardware and software support is provided by TU Dresden. As this is an award, i.e. not a regular project financing, we would encourage local universities not to deduct overhead.

Send the document as a PDF file (max. size 2 MB) to spinnaker2-award@tu-dresden.de. Inquiries about the award should also be directed to the above email address.

References:

- [1] Y. Yan et al., "Low-Power Low-Latency Keyword Spotting and Adaptive Control with a SpiNNaker 2 Prototype and Comparison with Loihi." <https://arxiv.org/abs/2009.08921>
- [2] C. Mayr et al., "SpiNNaker 2: A 10 Million Core Processor System for Brain Simulation and Machine Learning." <https://arxiv.org/abs/1911.02385>
- [3] Wikipedia contributors, "SpiNNaker," Wikipedia, The Free Encyclopedia, <https://en.wikipedia.org/w/index.php?title=SpiNNaker&oldid=950679615> (accessed June 24, 2020).
- [4] Y. Yan et al., "Efficient Reward-Based Structural Plasticity on a SpiNNaker 2 Prototype." in IEEE Transactions on Biomedical Circuits and Systems, vol. 13, no. 3, pp. 579-591, June 2019, doi: 10.1109/TBCAS.2019.2906401.
- [5] C. Liu et al., "Memory-Efficient Deep Learning on a SpiNNaker 2 Prototype." Frontiers in neuroscience vol. 12 840. 16 Nov. 2018, doi:10.3389/fnins.2018.00840