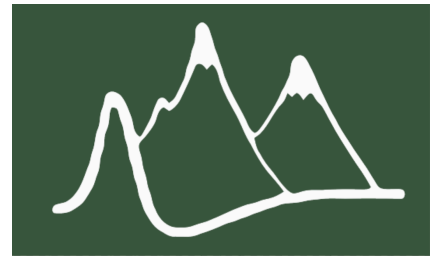
Call for Topic Area Proposals



2018 Telluride Neuromorphic Cognition Engineering Workshop

Telluride, Colorado, July 1 –July 21, 2018

DEADLINE: extended to 15 Jan 2018 (originally December 21th, 2018)

We are accepting proposals for Topic Areas in the 2018 Telluride Neuromorphic Cognition Engineering Workshop. The Workshop has been running successfully for over 20 years, and has been influential in shaping the field of neuromorphic engineering and serving as a forum connecting across disciplines such as neuroscience, cognitive science, machine learning, robotics, computer vision, signal processing, and electrical engineering.

For the 2018 workshop, we support topics and projects in neuromorphic cognition, with a focus on the theme of ***Embodied Perception and Cognition***. A tenet of Neuromorphic Engineering is that cognition and perception are shaped by the system's body. We seek projects with an emphasis on closing the loop between perception, cognition and the motor system involving neuromorphic and bio-inspired solutions. We support projects that have the potential to showcase advantages of brain-inspired sensors, computing platforms, cognitive architectures, or algorithmic principles, or establish new links between neuromorphic technology and other disciplines. We encourage projects aiming towards solving 'everyday' tasks that biological brains solve with ease, but which pose significant challenges to artificial computing systems. Of specific interest are approaches in robotics for navigation and manipulation with a collaboration between biologists, neuroscientists and engineers to bring biological principles to neuromorphic systems. We are also interested in projects that go beyond signal processing, including those involving higher-level cognition, language, and computational reasoning.

Successful proposals in the past have focused on topics such as navigating through an unknown environment, visual and auditory understanding of scenes and human actions, adaptively manipulating objects in the service of a task, neural network architectures for cognitive computing and their efficient hardware implementation, EEG-based systems to decode acoustic events, neuroprosthetic control, deep learning systems and transfer learning, etc.

Topic areas for this summer's Telluride Neuromorphic Cognition Engineering Workshop will be chosen from proposals submitted to the organizers.

Topic areas can span many aspects related to the overall theme of the workshop; project organizers are expected to be actively involved in coordination activities with other areas, and inviting top researchers covering different aspects of their project. Ideally, topic areas should be focused around potential applications of neuromorphic cognitive systems that can result in impressive demonstrators as the outcome of three weeks of focused work.

Topic proposals must include hands-on tutorials and educational overview presentations. Topic areas are meant to educate participating students, establish new links between disciplines, critically evaluate competing approaches, and encourage after-workshop collaboration between groups.

Topic area leaders will receive housing for themselves and four invitees, and limited travel funds. Topic area leaders will help to define the field of neuromorphic cognition engineering through the projects they pursue and the people they invite. They shape their topic by inviting speakers and project staff (the **invitees**) and by initiating topic discussions during and prior to the workshop. Teams of (no more than) two topic leaders are required, and at least one leader must be present at any given time during the workshop.

Pre-workshop topic area choices and study assignments.
At least one week before the workshop begins, each topic area will be required to prepare and distribute study materials that constitute: 1) an introductory presentation (e.g., pptx, video, review paper) of the fundamental knowledge associated with the topic area that *everyone at the workshop* should be exposed to, 2) a collection of a few critical papers that the participants in the topic area should read before the workshop, and 3) a syllabus of the first week hands-on tutorial exercises. The topic area should begin a group discussion of the projects (e.g., via the workshop wiki, Skype, email, etc).

The maximum 3-page proposals should include:

1. Title of topic area.
2. Names of the two topic leaders, their affiliations, and contact information (email addresses). Please note that there can only be TWO topic leaders, other co-organizers or supporting staff can be named as invitees.
3. A paragraph explaining the focus and goals of the topic area and its relation to the theme.
4. A list of possible specific topic area projects.
5. A clear plan to prepare students for the project, including a syllabus of lectures and hands-on tutorials at the workshop with preparatory material (websites, software, video lectures, etc).
6. A list of (neuromorphic or otherwise) sensors, hardware platforms, software packages, robots, or any other special equipment that are a part of your topic area project.
7. A list of planned invitees (up to six names and institutions).
8. Any other material that fits within the three-page limit that will help us make a smart choice.

Send your topic area proposal in pdf or text format to neuromorph-org18@googlegroups.com **with subject line containing "topic area proposal"**. If you do not get a response confirming receipt of your proposal, please contact one of the workshop organizers directly.

Proposals must be received by the deadline (see start of this document); proposals received after the deadline may still be considered if space is available. After a first evaluation the workshop organizers will interview the topic area leaders via phone or Skype before the final selection of topics.

We expect to accept 1-2 topic areas. We hope to have significant turn-over each year in the topic areas and leaders to ensure fresh new ideas and participants.

See the Institute of Neuromorphic Engineering (www.ine-web.org) for background information on the workshop and https://sites.google.com/view/telluride2018/home for the 2018 workshop web page.

We look forward to your topic proposals!

The 2018 Workshop Organizing Team:

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