



Call for Research Pre-Proposals: Advancing Spiking Neural Networks for Industrial and Energy Applications

Administrated by: SDAIA-KFUPM Joint Research Center for AI and Aramco.AI

Background and Context: Aramco. AI and the SDAIA-KFUPM Joint Research Center for AI share mutual interest in advancing the research of Spiking Neural Networks (SNNs). This initiative intends to advance ongoing efforts to apply neuromorphic computing principles to solve real-world challenges in industrial automation, energy efficiency, and intelligent sensing systems.

Objective:

To invite research proposals that contribute to the development of advanced techniques and applications in Spiking Neural Networks, with a focus on addressing algorithmic, computational and practical implementation challenges in high-impact industrial domains.

Priority Research Areas:

Proposals are invited in, but not limited to, the following topics:

- **Information Encoding in SNNs**
Investigate biologically inspired or task-specific encoding schemes such as spike latency coding or event-based encodings.
- **Training Algorithms for SNNs**
Develop efficient training methods including surrogate gradient learning, STDP variations, or hybrid learning techniques.
- **Neuromorphic Architectures**
Explore design and evaluation of SNN-compatible hardware platforms, such as Loihi, SpiNNaker, or energy-efficient FPGA/ASIC implementations.
- **Practical applications of SNN**
Identify industrial challenges where SNN outperform other Neural Network architectures with the inclusion of demonstrating analysis and results.

Eligibility:

KFUPM Affiliates. PI must be a faculty member or a research scientist.

Pre-Proposal Requirements:

Please fill in the online form: <https://forms.office.com/r/XXbqhKni3R>

Deadline: November 11th, 8:00am

For inquiries, contact:

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