Postdoctoral Research Position

Deep Learning and Inverse Modeling for Physical Sciences

CASC — Center for Applied Scientific Computing

jobs.llnl.gov
Job ID 107126

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The Center for Applied Scientific Computing (CASC) at the Lawrence Livermore National Laboratory (LLNL) seeks a postdoctoral researcher with experience in deep learning, representation learning, and inverse modeling to contribute to the development of cognitive simulations that advance high-energy-density (HED) science and related areas. HED science lets us understand the universe and new states of matter, and may hold the key to virtually unlimited clean energy. Until now HED research has consisted of theoretical equations that evolved into some of the largest, most sophisticated computational models on one end and mind-boggling experiments creating supernova conditions in the laboratory on the other. CASC's machine learning researchers are finally joining these sides. Through the latest developments in representation learning and new approaches to multimodal forward and inverse modeling, a multidisciplinary team is coupling the diverse set of diagnostics from experiments with petabytes of simulation data to create a unified framework of HED science. Contact us if you are interested in joining our unique team of machine learning researchers, data analysis experts, and domain scientists.
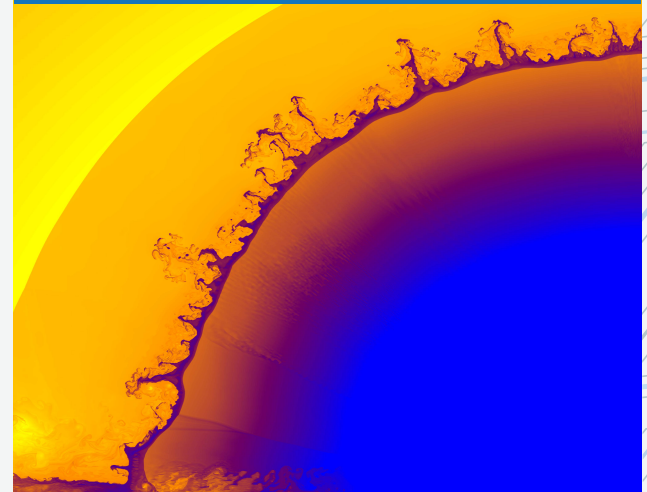
Requirements of research activities include but are not limited to:

- Experience with deep learning techniques such as representation learning, generative modeling, multimodal learning, and solving ill-posed inverse problems
- Implementing appropriate ML algorithms in frameworks such as TensorFlow, PyTorch, or LBANN
- Publishing research in top-tier ML and vision venues (e.g., NeurIPS, ICLR, CVPR, ICML, AAAI) and/or high-impact journals
- Interacting with application scientists to understand the scientific hypotheses and translate them into data science objectives
- Excellent communication skills and ability to work in large teams

Familiarity with HED physics or related topics is desirable but not necessary. Candidates will be encouraged to conduct relevant exploratory research and publish results. They will work on an interdisciplinary team of scientists including domain scientists, computational physicists, ML researchers, and visualization experts.

Lawrence Livermore National Laboratory