Stanford FLAME AI Workshop

Future Learning Approaches for Modeling and Engineering

Dates: Sept 5 to Sept 15 2023 | Venue: Virtual [**https://flame-ai-workshop.github.io/**]
Contact: **flame.ai.workshop@gmail.com**

Mission

To foster a dynamic forum for exchanging ideas, data, methods, and models related to ML techniques for fluid dynamics, turbulence, and combustion - fields crucial to the development of energy, propulsion, climate, and safety systems.

Agenda

1. A **10-day-long ML challenge** (involving 1-2 person(s) per team) will be held to tackle generative modeling in fluid dynamics/turbulence with open-source data.
   - Prize: GPU credits, and leading teams will be invited towards a joint publication.
2. **Daily talks** on cutting-edge trends will be given by AI/ML experts within Stanford, academic guests, and industry partners from the Greater Silicon Valley ecosystem. Topics include:

Fundamentals of data-driven tools

Classification vs. Regression. Open-source ML libraries (Torch, Tensorflow) and platforms (Kaggle). Best practices for training models.

AI for Science

Trends in data, benchmarks, and methods. Tools/platforms for ML-based scientific discovery. Foundation models for science.

Generative Machine Learning

Semi-supervised learning. Diffusion models. Reinforcement learning. GANs.

Physics-informed Machine Learning

Physics-informed loss and architecture. Data-centric vs. model-centric vs. knowledge-centric.

Eligibility Criteria

We invite Computational, Fluid Dynamics, Combustion, or AI/ML researchers worldwide to join us at this virtual workshop. Sign up at **https://flame-ai-workshop.github.io/** for future info on the technical program.

Apply here:

FX Lab | Stanford ENGINEERING | Laboratory of Fluids in Complex Environments

Lead organizers
Prof. Matthias Ihme (Stanford University, SLAC National Accelerator Laboratory), Wai Tong Chung (Stanford University)