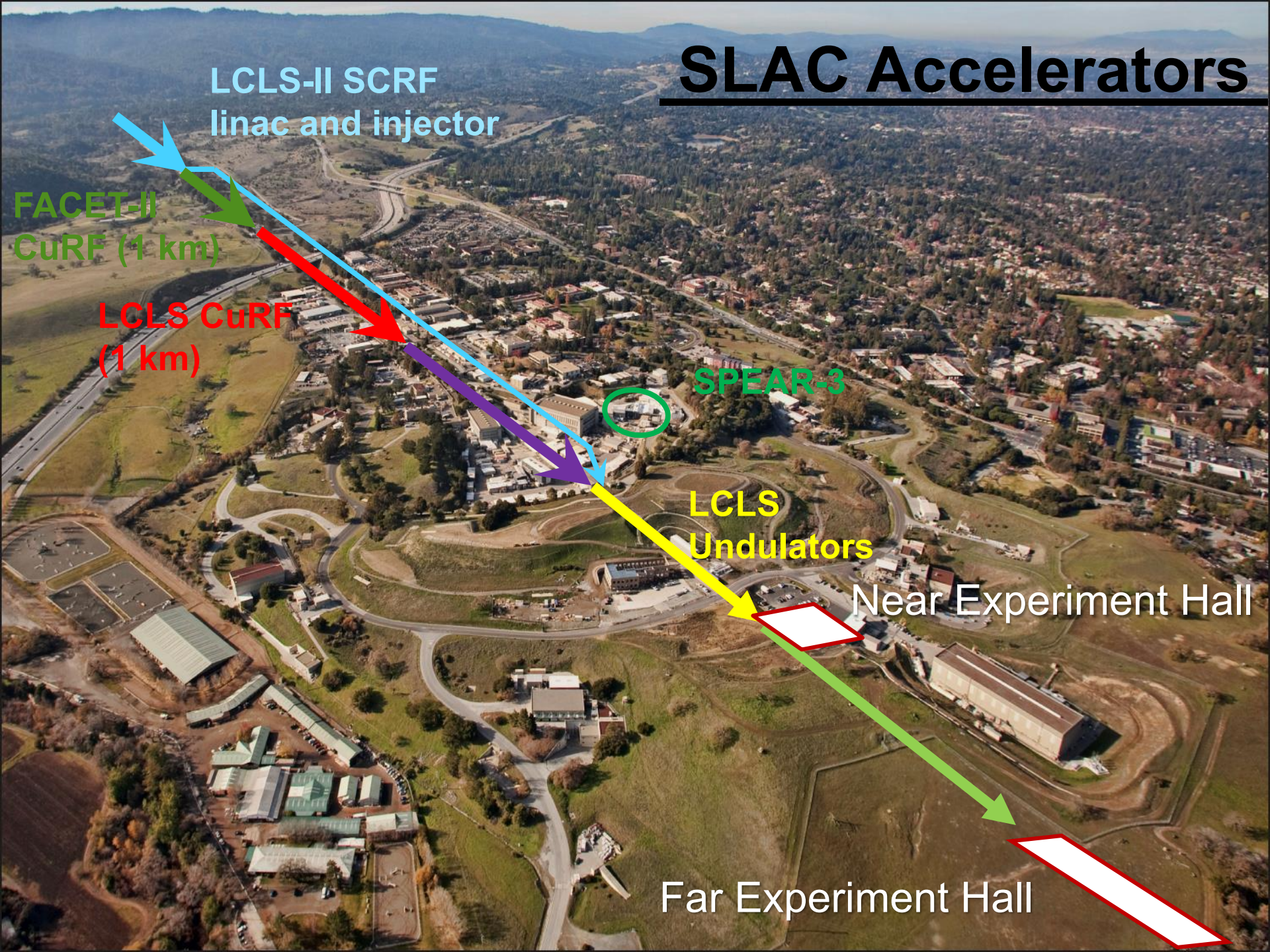
Machine Learning Applications for Particle Accelerators

Tuesday, February 27 through Friday, March 2, 2018

U.S. DEPARTMENT OF ENERGY
Office of Science

SLAC NATIONAL ACCELERATOR LABORATORY


SLAC Accelerators
LCLS-II SCRF
linac and injector
FACET-II
CuRF (1 km)
LCLS CuRF
(1 km)
SPEAR-3
LCLS
Undulators
Near Experiment Hall
Far Experiment Hall

Workshop Goals

- Collect and unify the community's understanding of the relevant state-of-the-art ML techniques.
- Provide a simple **tutorial** of machine learning for accelerator physicists and engineers.
- Seed **collaborations** between laboratories, academia, and industry.
- Author a **whitepaper** explaining the current opportunities for ML techniques in particle accelerators, with a few illustrative examples. This whitepaper should explain why now is the time for the community to fully embrace ML alongside optimization as the modern way to aid particle accelerator design and operation.

Web presence and communication

SLAC

Workshop website

https://conf.slac.stanford.edu/icfa-ml-2018/

Timetable

https://indico.fnal.gov/event/16327/timetable

Slack Workspace Messaging

http://accelerator-ml.slack.com

Zoom Videoconferencing

https://stanford.zoom.us/j/750616509

Schedule

Tuesday: Tutorial
Wednesday Morning: Facility Needs
Afternoon: Tuning
Evening: Dutch Goose Reception
Thursday Morning: Simulations and Modeling
Afternoon: Prognostics, Tour
Evening: Meyer-Buck House Reception
Friday Morning: Data Analysis and Summary
Afternoon: Whitepaper planning

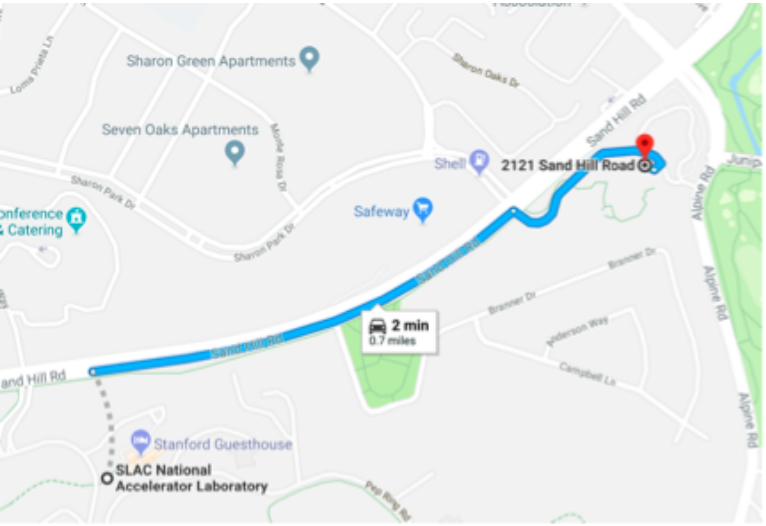
Every day Breakfast: 7:30-9pm
Lunch: noon-1:30pm

Wednesday Reception: Dutch Goose

- 6-9pm
- Transportation on your own
- Food and Drinks provided
- 3567 Alameda de las Pulgas, Menlo Park, CA 94025
- http://www.dutchgoose.net
- Sports Bar
- Parking lot, street parking

Thursday Reception: Meyer-Buck House

- 6-8pm
- Transportation on your own
- Drinks and hors d'oeuvres provided
- (optional) Parking at Hewlett Foundation: 2121 Sand Hill Rd, Menlo Park, CA 94025



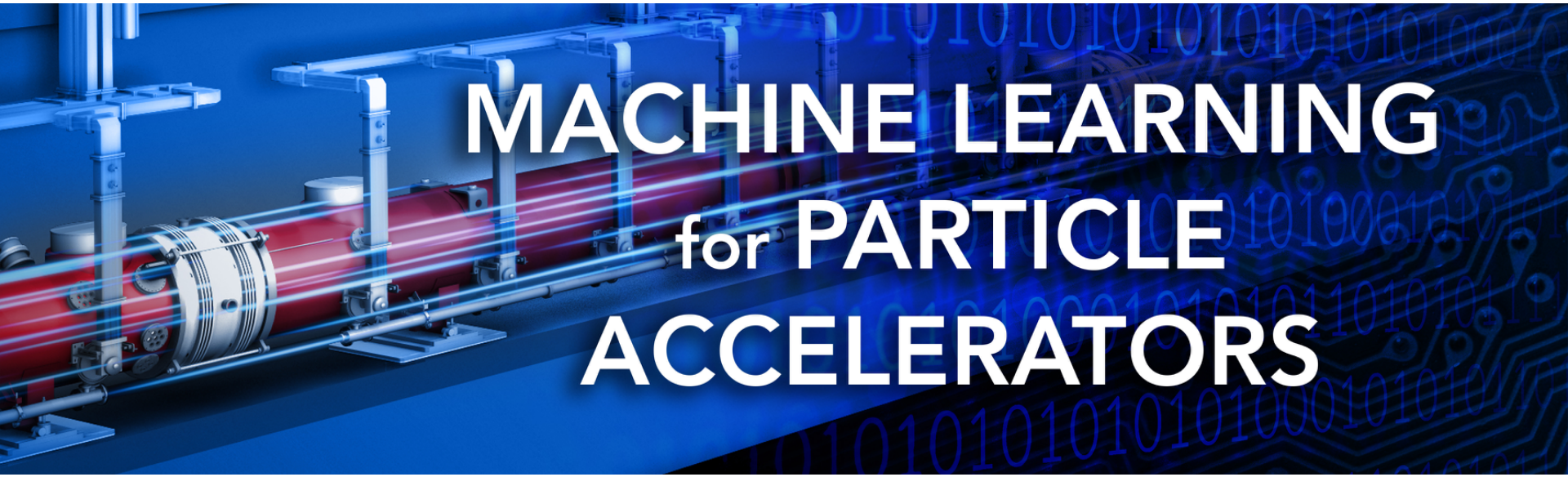
Organizers

Local organizing Committee

Xiaobiao Huang	xiahuang@slac.stanford.edu
Christopher Mayes	cmayes@stanford.edu
Daniel Ratner	dratner@slac.stanford.edu
Tor Raubenheimer	tor@slac.Stanford.edu

Program Committee

Yunhai Cai, Erik Bründermann, Gianluca Valentino, Alexander Sheinker, Minjie Yan, Anke-Susanne Müller, Daniel Bowring, Ilya Agapov, Auralee Edelen, Kevin Li, Rasmus Ischebeck, Sandra Biedon, Xiaobiao Huang, Christopher Mayes, Daniel Ratner, Tor Raubenheimer


MACHINE LEARNING
for PARTICLE
ACCELERATORS