
Plan of the day: **2:30pm - 6:00pm (ET)**, 5/2/2022

- **Part I (2:30 – 3:10 ET): Introduction: autotuning of ECP applications**
 - Presentation (20min, **Yang**)
 - Introduction of autotuning
 - Gaussian process and Bayesian optimization
 - Multi-task learning algorithms
 - GPTune software interface
 - Hands-on (20min, **Yang, Younghyun**)
 - Install the docker image
 - Setup runtime environment
 - Basic functionality test
 - Spack installation and test
- **Break (3:10 – 3:20 ET)**
- **Part II (3:20 – 4:30 ET): Advanced algorithms in GPTune**
 - Presentation (40min, **Yang**)
 - Parallel GPTune framework
 - Multi-objective tuning
 - Analytical performance model
 - Multi-fidelity tuning with GPTuneBand
 - Non-smooth tuning with cGP
 - Hands-on (20min, **Yang, Younghyun**)
 - Parallel performance
 - Multi-objective tuning with spawning and RCI modes
 - Analytical performance model
 - GPTuneBand
 - cGP
- **Break (4:30 – 4:40 ET)**
- **Part III (4:40 – 5:30 ET): History database and crowd-tuning**
 - Presentation (20min, **Younghyun**)
 - Overview of crowd-tuning
 - History database
 - Web interface
 - Crowd-tuning API
 - Transfer learning (TLA) with history database
 - Sensitivity analysis
 - Hands-on (30min, **Younghyun, Yang**)
 - Web dashboard
 - Account and token creation
 - Crowd-tuning APIs
 - TLA with a synthetic function
 - Sensitivity analysis on SuperLU_DIST
- **Part IV (5:30 – 6:00 ET): Q&A and discussion**

Hands-On:

- Prepare the Docker image
 - <https://bit.ly/3rRMthH>
 - Install Docker on your machine
 - Download the GPTune docker image
- Part I: Basic usage of GPTune
 - <https://bit.ly/3kbeA7p>
 - Set up the runtime variables
 - Run a simple synthetic function demo
 - Try spack installation and testing
- Part II: Advanced algorithms of GPTune
 - <https://bit.ly/37JyIQH>
 - Try the advanced features using the applications of synthetic functions, Scalapack-QR, SuperLU_DIST and Hypre
- Part III: Database and crowd-tuning
 - <https://bit.ly/37Jn4zZ>
 - Web interface, crowd-tuning API and transfer learning