



## Intel Developer Tools Training

### Intel AI Analytics Toolkit

Texas A&M University

January 21<sup>st</sup>, 1:30 -4:00 CST

#### Agenda

The workshop will cover Intel optimizations implemented on top of stock versions of data science libraries like NumPy, SciPy, Scikit Learn, and DL frameworks like Tensorflow and Pytorch. Hands on exercises will be followed to showcase how to get started using Intel AI software and the performance benefits achieved from using Intel optimizations.

- **Lecture - What is oneAPI – AI Analytics Toolkit – 10 min.**
  
- **Intel Distribution for Python (IDP)**
  - **Skill Level** – High level understanding of some data science Python libraries, Python beginner level
  - Overview of optimizations inside Python – 5 min
  - Exercise – complete with instructor – 20 min
  - Exercise URL - <https://github.com/mtolubaeva/numpy-tests>
  - Individual time to complete exercise, Q&A – 5 min.
  - Expected Outcome – be able to see the performance benefit of using IDP libraries over stock Python libraries like NumPy, SciPy etc.
  
- **Intel Extensions for Scikit Learn**
  - **Skill Level** – High level understanding of Scikit Learn library, Python beginner level
  - Overview of optimizations inside SciKit Learn – 5 min
  - Exercise – complete with instructor – 20 min.
  - Exercise URL - [https://github.com/oneapi-src/oneAPI-samples/tree/master/AI-and-Analytics/Features-and-Functionality/IntelScikitLearn\\_Extensions\\_SVC\\_Adult](https://github.com/oneapi-src/oneAPI-samples/tree/master/AI-and-Analytics/Features-and-Functionality/IntelScikitLearn_Extensions_SVC_Adult)
  - Individual time to complete exercise, Q&A – 5 min.
  - Expected Outcome – be able to run an SVC algorithm with Intel® Extension for Scikit-learn and compare its performance against the original stock version of scikit-learn. Students will see that patching scikit-learn results in a significant increase in performance over the original scikit-learn while also maintaining the same precision.
  
- **Intel Optimization for PyTorch**
  - **Skill Level** – High level understanding of Deep Learning concepts, Pytorch beginner level
  - Overview types of optimizations, PyTorch– 5 min.
  - Exercise – complete with instructor – 20 min.
  - Exercise URL - [https://github.com/jingxu10/retinanet\\_ipex](https://github.com/jingxu10/retinanet_ipex)

- Individual time to complete exercise, Q&A – 5 min.
- Expected Outcome – be able to see the performance benefit of using Intel Optimizations for Pytorch over stock Pytorch framework.
  
- **Intel Optimizations for TensorFlow**
  - **Skill Level** - High level understanding of Deep Learning concepts, Tensorflow beginner level
  - Overview types of optimizations, TensorFlow – 5 min.
  - Exercise – complete with instructor – 20 min.
  - Exercise URL - [https://github.com/oneapi-src/oneAPI-samples/tree/master/AI-and-Analytics/Features-and-Functionality/IntelTensorFlow\\_PerformanceAnalysis](https://github.com/oneapi-src/oneAPI-samples/tree/master/AI-and-Analytics/Features-and-Functionality/IntelTensorFlow_PerformanceAnalysis)
  - Individual time to complete exercise, Q&A – 5 min.
  - Expected Outcome – be able to see the performance benefit from using Intel Optimizations for Tensorflow over stock Tensorflow framework.