HPC: GPU Programming with Python	
Description	Learn about multiple GPU programming models using Python as base language and choose the one that best fits your needs. This lab will cover an introduction to GPU programming using Python: CuPy, Numba, CUDA Python
Prerequisites	Basic experience with Python
Tools and Frameworks	Python: Numba, CuPy, CUDA Python
Content	Intro to GPU Programming lecture A quick guide to CuPy lecture (45mins) CuPy Labs and Lab work (45mins) Numba for CUDA GPU lecture (45mins) Numba Labs and lab work (45mins)
HPC: GPU Programming with OpenACC	
Description	Learn how to write a portable parallel program that can run on multicore CPUs and accelerators like GPUs and how to apply incremental parallelization strategies using the OpenACC programming model to accelerate an example application that simulates heat distribution across a 2-dimensional metal plate and applying this knowledge to accelerate a mini-application.
Prerequisites	Basic experience with C/C++ or Fortran
Content:	Intro to GPU Programming Basics of GPU Programming with OpenACC - 3 labs (Parallel, Data , Optimization) Coding Challenge using a mini-app
Intelligent Video Analytics using DeepStream	
Description	Learn how Nvidia DeepStream SDK can be used to create optimized Intelligent Video Analytics (IVA) pipeline. Participants will be exposed to the building blocks for creating IVA pipeline followed by profiling exercise to identify hotspots in the pipeline and methods to optimize and get higher throughput
Prerequisites	Basic experience with Python. Prior knowledge of using Deep Learning in Imaging domain is expected from participants
Content	Intro to DeepStream and GStreamer Building Blocks Creating a IVA workflow using DeepStream Piepline engine Introduction to Multi DNN Pipeline Coding challenge:Generate a Multi-DNN Multi-Stream Peipeline Increasing Throughput of DeepStream pipeline using Profiling (Social Distancing UseCase)
Accelerated Data Science using RAPIDS	
Description	Learn how RAPIDS suite of open source software libraries gives you the freedom to execute end-to-end data science and analytics pipelines entirely on GPUs. Participants will be exposed to using libraries that can be easily integrated with the daily data science pipeline and accelerate computations for faster execution. This bootcamp will focus on CuDF, CuML and Dask to run analytics pipeline on multiple GPU
Prerequisites	Basic experience with Python. Prior knowledge of Machine Learning and Data Analytics is expected from participants
Tools and Frameworks	Nvidia RAPIDS
Domains covered	Data Science
Content	Intro to RAPIDS Eco system Module Labs: CuDF (Acclerated Pandas), CuML (Accelerated SkLearn) and DASK (Multi Node) Coding challenge: Participants convert SkLearn based real world example to using RAPIDS (
HPC: Multi-GPU Programming	
Description	Scaling applications to multiple GPUs across multiple nodes requires one to be adept at not just the programming models and optimization techniques, but also at performing root-cause analysis using in-depth profiling to identify and minimize bottlenecks. In this bootcamp, participants will learn to improve the performance of an application step-by-step, taking cues from profilers along the ways.
Prerequisites	CUDA Programming knowlege is required. C programming knowhow
Content	Overview of single-GPU code and Nsight Systems Profiler Single Node Multi GPU (P2P) Multi Node Multi GPU (GPU Direct) NCCL NVShmem
Distributed Deep Learning	
Description	The objective of this bootcamp is to give an introduction to Distributed Deep Learning. This bootcamp will introduce participants to fundamentals of Distributed deep learning and give a hands-on experience on methods that can be applied to Deep learning models for faster model training on dense GPU systems.
Prerequisites	Basic experience with Python. Prior knowledge of Deep Learning is expected from participants
Content	Introduction to Distributed deep learning Understanding System Topology Hands-on with Distributed training (Horovord, TensorFlow) Techniques for faster convergence
Advance CUDA	
Description	The Bootcamp is designed for CUDA users who would like to learn intermediate to advance CUDA optimization techniques for code acceleration
Prerequisites	Basic experience with C/C++ as well as knowledge of parallel computing fundamentals or basics of CUDA
Content	CUDA 101 GPU Memory Hierarchy and Evolution Global memory Optimization Shared Memory Optimization GPU Occupancy Atomic operation Warp Divergence and Warp Synchronous programming CUDA Sanitizer Nsight profiling Compute: Roofline Analysis