



# GPU Technology Conference

SAN JOSE, CALIFORNIA, USA 2019

Shlok Mohta 17<sup>th</sup> March – 21<sup>st</sup> March

As a part of the Computational Alliance of the University of Tokyo, I was given the opportunity to attend the GPU Technology Conference, 2019 (GTC), which was held from 17<sup>th</sup> March to 22<sup>nd</sup> of March. The conference hosted a variety of lectures in vivid domains pertaining to Artificial Intelligence, Graphics, High Performance Computing, Manufacturing, Life sciences, to name a few among the plethora. We attended the conference from 18<sup>th</sup> March to 20<sup>th</sup> March. The group was supervised by Dr. Matsumoto Masaharu, Graduate School of Information Science and Technology.

Over the course of three days, I attended various lectures listed as follows:

Days	Lectures
17 <sup>th</sup> March	<ol style="list-style-type: none"> <li>1. Performance Analysis for Large-Scale GPU-Accelerated Applications and DL Frameworks</li> <li>2. Low-Ordered Unstructured Finite Elements Earthquake Simulation with AI and Transprecision Computing</li> <li>3. Opening Keynote by Jensen Huang</li> <li>4. Posters and Beer</li> </ol>
18 <sup>th</sup> March	<ol style="list-style-type: none"> <li>1. Advanced Weather Information Recall with DGX-2</li> <li>2. Semi-supervised deep learning applications</li> <li>3. Machine Learning Parametrization of Atmospheric Processes</li> <li>4. Large-Scale Road Network Simulations for Smart Cities</li> <li>5. Memory Management of Modern GPU Architectures</li> <li>6. Learning from limited data</li> </ol>
19 <sup>th</sup> March	<ol style="list-style-type: none"> <li>1. Deep learning for Spatiotemporal Data</li> <li>2. Learning based Predictive Models: A New approach to Integrating Large-Scale Simulations and Experiments</li> <li>3. CUDA implementation of Modern preconditioning Techniques for iterative solvers of Linear systems</li> <li>4. Fast Singular Values Decomposition on GPUs</li> <li>5. Automatic Model Tuning in Practice Using Bayesian Hyperparameter Tuning</li> </ol>

As it can be seen from the list of the sessions attended, the lectures were distributed over a wide range of topics from explicit computer sciences to the best practices and applications of modern computing methods in applied sciences. The lectures selection focused to cover a broad range of topics to facilitate discovery into the current state of the art methods in areas pertaining to my research. Each lecture was presented by people driving the advances in the relevant subjects, sharing their insight developed through years in the same.

The poster session was also very exciting. Many of the researchers had published work which took the best advantage of system architectures, showing improved performance and innovative pipelines developed to achieve the same. For me in particular, I was excited to see all the development presented for accelerating problems related to fundamental

sciences. In particular, work done by Mr. Guido for optimizing airfoil design using Reinforcement learning captivated my attention. The free beer coupons helped to make the environment more interactive in a way and I could exchange ideas and opinions with many international peers present there.

One instance which would forever remain close to my heart was meeting with Dr. David Luebke, Senior Director at NVIDIA Research. It was through a series of online lectures by Dr. David and Dr. John Owens, Associate Professor at UC Davis, that I was introduced to the amazing and exciting world of parallel computing. In many ways, it was because of their online lecture series that I am pursuing my current goals, and so being able to meet with him at GTC and thank him for the same was very exciting and emotional for me. I would forever cherish this memory.

Lastly, the 3-day stay at San Jose was amazing. It was my first visit to the United States, and so I was pretty excited about the trip and the experiences stood up to the excitement. The city had such beautiful weather with clear skies. Really wide streets, big buildings, and everything else big too.

In all, it was a memorable trip, with lots of new learning and insights into the current tech world.

I would sincerely like to express my gratitude towards Computational Science Alliance for providing me with this opportunity.