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shravan-chaudhari

Shravan Chaudhari

Data Science and Analysis

Shra1-25
Shravan-Chaudhari
Google Scholar

Education

Master of Science, Computer Science, New York University (Courant Institute of Mathematical Sciences) **Sep 2021 — May 2023**
Cumulative CGPA: 4.0/4.0
Relevant Coursework: Fundamental Algorithms, Computer Vision, Programming Languages

Bachelor of Engineering, Electronics & Instrumentation, Birla Institute of Technology & Science Pilani **Aug 2017 — May 2021**
Relevant Coursework: Neural Networks & Fuzzy Logic, Object Oriented Programming, Computer Programming

Experience

Research Fellow @ National Science Foundation, Princeton Institute of Computational Science and Engineering **May 2021 — Oct 2021**
- Developed geometric deep learning algorithms for identification of high energy particle signals from 3 different types of background noises.
- Designed a framework to deploy graph neural networks (GNNs) within CERN software analysis pipeline using C++ ONNX API and Torch-Geometric library.
- **Key accomplishments:** Increased the state-of-the-art algorithm performance from the ROC AUC score of 0.7 to 0.85 (our performance) for identification of Tau particles. .

Data Science & Machine Learning Intern @ ML4SCI 2, Google Summer of Code 2021 **May 2021 — Aug 2021**
- Designed & implemented graph based modelling strategies to analyze particle images having 13 image channels corresponding to various detectors at the Large Hadron Collider.
- **Key accomplishments:** Achieved ROC AUC score of 0.974 by building graph representations of the particle images followed by graph based machine learning algorithms for classification of particles such as electrons, photons, quark, gluons, boosted top jets, etc.

Machine Learning R & D Intern @ CERN & Nvidia, Bachelors Thesis **Sep 2020 — May 2021**
- Optimised and parallelized the training and inference of large scale deep learning algorithms for huge dataset of 4 million images using computing nodes and V100 GPUs provided by Nvidia as part of their International GPU Hackathons, Bootcamps and other collaborations .
- Used horovod framework for optimising tensorflow based ResNet models and tensorRT SDK for optimising the pytorch model inferences.
- **Key Accomplishments:** Accelerated training speed by 93% on optimisation for a single V100 GPU and by 97% via distributed training on 4 GPUs.

Open Source Developer @ CERN, Google Summer of Code 2020 **May 2020 — Aug 2020**
- Created a C++ based End-to-End Software (E2E) framework to enable advanced data processing and complex analysis on the CERN database.
- **Key Accomplishments:** Integrated the E2E framework with the CERN inference engine to support deployment of machine learning architectures like GNNs, CNNs, Variational Autoencoders, etc. trained with either of the 4 different frameworks: tensorflow, mxnet, onnx and pytorch.

Highlighted Projects

Machine Learning for Healthcare **Jan 2020 — May 2020**
Computer Vision based ECG Report Analysis
- Developed Android based mobile application for interpreting printed ECG/EKG reports using state-of-the-art convolutional neural networks to predict heart rates with 80% accuracy, heart diseases and to detect anomalies.
- Utilized MIT physionet lightwave ECG data set for 32 patients to train and deploy ML algorithms on the edge using tensorflow android API.
- **Key Accomplishments:** 2^{nd} prize winner at the National Data Science Hackathon organised by Indian Institute of Science Bangalore and also winner of TechExpo Startup Hackathon organized by Indian Institute of Technology Guwahati.

Skills

Languages	Python, C++, C, Latex, SQL
Frameworks	Pytorch, Tensorflow, Keras, Horovod, ONNX, TensorRt, MxNet
Development Tools	Git, Docker, Singularity

Publications

1. M. Andrews *et al.* Accelerating End to End Deep Learning for Particle Reconstruction using CMS open data. *The European Physical Journal Conferences 251:03057* (2021).
2. M. Andrews *et al.* End-to-End Jet Classification of Boosted Top Quarks with CMS Open Data. *The European Physical Journal Conferences 251:04030* (2021).

Leadership & Extracurricular Activities

- **Course Grader for Data Management and Analysis (CSCI-UA.479) course at NYU.**
- **Mentor and Organizer @ Machine Learning for Science organisation:** Mentored 3 students through google summer code program on machine learning projects for astrophysics, particle physics. Organized international ML hackathons for their application in sciences. .
- **Coordinator of Fashion Club BITS Goa:** Managed a club of 50 students & organized 2 fashion events every year at the BITS Pilani University. Also, organised performances & participated in various fashion contests.