VARUN SREENIVASAN

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Software Engineer with an excellent academic record and work experience Independent thinker, problem solver, and a team player.

EDUCATION

M.S. Computer Science, University of Wisconsin-Madison *(December 2021)*
G.P.A: ***4.00/4.00***

B.S. Computer Science (Minor: Mathematics), University of Wisconsin-Madison *(May 2020)*
G.P.A: ***3.90/4.00*** *"Distinction in the Major"*, and *Dean's*

RELEVANT COURSEWORK

Artificial Intelligence, Machine Learning, Computer Vision, Data Science, Computer Networks, Mobile & Wireless Networks, Operating Systems, Algorithms, Data Structures, Cryptography, Combinatorics, Spatial Web & Mobile Programming.

LICENSES & CERTIFICATIONS

Certified Solutions Architect Associate, Certified Machine Learning Speciality, Certified Cloud Practitioner – Amazon Web Services

LANGUAGES & TECHNOLOGY SKILLSETS

Languages: Java, Python, C, C++, Matlab, CUDA, SQL
Platforms and Frameworks: AWS, PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, Docker, Spark, CircleCI
Dev Tools and OS: Jupyter Notebook, Visual Studio Code, Git, Github, Unix, Windows

EXPERIENCE

DataChat, Inc. **Madison, WI**
Software Engineer II **Feb 2022 - Present**

- Design and implement backend solutions to expand the product with robust features.
- Actively monitor reliability and quality of platform through rigorous testing and bug fixing.
- Engage in code reviews to promote quality development across the team.

National Science Foundation – IRIS HEP **Berkeley, CA**
Fellow – Graph Methods for Particle Tracking (High Luminosity Large Hadron Collider) **May 2021 - August 2021**

- Performed feature engineering in the processing stage to select cluster features to construct events from TrackML dataset.
- Developed the Embedding pipeline involving graph construction, in which the objective is to find a good distance metric between pairs of 3D hit measurements wherein pairs belonging to same particles are nearby and further apart for different particles.
- Achieved significant speedup by replacing Facebook's Faiss with Fixed Radius Nearest Neighbors (FRNN) on CUDA.
- Generated the optimal PyTorch based embedding model with 99% efficiency and 1% purity through hyperparameter scanning.

University of Wisconsin-Madison **Madison, WI**
Master's Research – Autonomous RC Car **September 2020 - December 2021**

- Created custom dataset and developed pipeline to transform dataset into annotations compliant with Pascal VOC format.
- Generated an efficient PyTorch based SSD Mobilenet object detection model to do live detection of traffic signs.
- Deployed the model on Nvidia's Jetson Xavier NX.

Citrine Informatics **Redwood City, CA**
NextGen-Fellow – Computational Materials Science **May 2018 - August 2018**

- Multi-university research project: Competitively selected, successfully completed bootcamp & workshop at Stanford University.
- Utilized a Keras implementation of RetinaNet object detection model to identify defects in metals.
- Developed evaluation pipeline to determine recall and precision metrics. Obtained a model with 85% precision and 68% recall on the test set through hyperparameter optimization. Performed analysis to determine the reason for high false negative rate.
- Presented the results at NextGen Research Symposium in Golden, CO and co-authored a paper.

ACADEMIC PROJECTS

Business Success/Viability Forecast ***Machine Learning Project***
Group project with three people. Developed multiple M.L. models (Logistic Regression, Random Forest, KNN, Naïve Bayes, SVM, and Neural Net) using the Yelp dataset to predict whether businesses will survive the impacts of COVID-19. Performed feature engineering to obtain a final parsed dataset, created a training and validation pipeline that integrates SMOTE (address class imbalance) to guide parameter selection, evaluated models on unseen test data with multiple metrics, and determined the vital features using the Permutation Importance algorithm. Built using Python, PyTorch, Scikit-learn, & Numpy. Source Code

Instance Segmentation App ***Computer Vision Project***
Group project with three people. Built an exciting app that people can use for their instance segmentation tasks to obtain annotated images. App has multiple modes that allows users to specify the type of objects they are interested in. This is achieved by making use of multiple Mask-RCNN models trained (both fine-tuned and pre-trained) on different datasets such as COCO, LVIS, Cityscapes, etc. Furthermore, the interactive functionality powered by GrabCut allows users to iteratively refine the segmented results. Built using Python, PyTorch, OpenCV, Detectron2, JavaScript, HTML, CSS, jQuery, Bootstrap, & Docker. Source Code