

# VARUN SREENIVASAN

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## 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 List

## RELEVANT COURSEWORK

Artificial Intelligence, Machine Learning, Computer Vision, Data Science, Matrix Methods in Machine Learning, Computer Networks, Mobile & Wireless Networks, Algorithms, Data Structures, Operating Systems, Combinatorial Optimization, Cryptography, Calculus, Combinatorics, Linear Algebra & Differential Equations, Discrete Math, Machine Organization & Programming, Java Programming, Spatial Web & Mobile Programming.

## EXPERIENCE

**National Science Foundation – IRIS HEP**

*Fellow – Graph Methods for Particle Tracking*

**Berkeley, CA**

**May 2021 - August 2021**

I am adapting the Nearest Neighbors algorithm to speed up graph construction in GNNs. This will pave the way for achieving enhancements in the particle track reconstruction process, which is required by the High Luminosity Large Hadron Collider (HL-LHC).

**University of Wisconsin-Madison**

*Master's Research – Autonomous RC Car*

**Madison, WI**

**September 2020 - April 2021**

Developed an efficient PyTorch based object detection model using SSD Mobilenet to do live detection of traffic signs such as speed limits and stop signs on Nvidia's Xavier NX.

**Citrine Informatics**

*NextGen Fellow – Deep Learning*

**Redwood City, CA**

**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, co-authored a paper and presented the results at NextGen Research Symposium in Golden, CO. (Please see link): [Computation-Materials-Department-Announcement](#)

## SOFTWARE PROJECTS

**Business Success/Viability Forecast**

**Machine Learning Project**

Successfully implemented multiple M.L. models (Logistic Regression, Random Forest, KNN, Naïve Bayes, SVM, and Neural Net) using the Yelp dataset to predict whether businesses will succeed/survive the impacts of COVID-19 and determined the most vital features in this classification task. Built using Python.

**Instance Segmentation App**

**Computer Vision Project**

Built an exciting app that people can use for their instance segmentation tasks. Users can upload their own images and obtain the annotated image. For each object detected, the annotation includes a bounding box that, a class label, and a binary mask that segments the object from the background. App has multiple modes that allows users to specify the type of objects they are interested in. Furthermore, the interactive functionality powered by GrabCut allows users to iterative refine the segmented results.

**Twitter Analytics**

**Data Science Project**

Software for assessing Twitter sentiment. Preprocessed tweets stored in a JSON file, then with the resulting clean tweets performed sentiment analysis using the sentiment values of known terms, and derived sentiment scores for unknown terms. Built using Python.

**MapReduce Abstraction**

**Data Science Project**

Sophisticated data science tool for large matrix operations. Developed multiple implementations incl. matrix multiplication, relational join, and creation of an inverted index data structure. Built using Python.

**World Safety Portal**

**Spatial Web & Mobile Prog. Project**

Created a complex web & mobile app on Google maps for users to submit, query, track & visualize natural event reports & to make donations. Implemented two AJAX functions to interact with the server via web client -- one to create database reports and the other to query them. Built using Java, AJAX, JSP, JavaScript, Google Map JavaScript API, CSS, Bootstrap, jQuery, HTML, PostGIS & PSQl.

## LANGUAGES & TECHNOLOGY SKILLSETS

**Proficient:** Java, Python, C, scikit-learn, pandas, Eclipse IDE, Linux Vim, Jupyter Notebook, Unix & Windows

**Working Knowledge:** Matlab, C++, SQL, Assembly, TensorFlow, PyTorch, Visual Studio Code, Google Colab & Git

**Familiarity:** Javascript, Android SDK, HTCondor: High-throughput Computing & Cluster Machines, ArcGIS