Aaron Jacob Varghese

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Education

- **Boston University** — Boston, MA
  Master of Science in Computer Science — *Sep. 2019 - Dec. 2020 (expected)*
- **International Institute of Information Technology (IIIT-H)** — Hyderabad, India
  Bachelor of Technology in Computer Science and Engineering (Honors in Computer Vision) — *Aug. 2015 - April 2019*

Experience

- **Intel Corporation** — Bangalore, India
  Undergraduate Machine Learning Intern — *June 2018 - July 2018*
  - Extensive research study on efficient semantic segmentation with a goal to devise a method for real-time segmentation for autonomous driving applications.
  - Trained latest semantic segmentation models for comparison with existing state-of-the-art models using PyTorch and Tensorflow on new datasets like Berkeley Deep Drive and Indian Driving Dataset.
- **Center for Visual Information Technology, IIIT-H** — Hyderabad, India
  Undergraduate Researcher — *May 2017 - May 2019*
  - Involved in multiple research and development projects mentored by Prof. C.V. Jawahar, ranging from an online portal for accurate annotation of videos to a full-fledged research project that resulted in a research paper.
  - Close collaboration with industry experts as well as PhD and Masters students, leading to experience in deep learning, computer vision and team-based projects.
- **Froogal - A digital loyalty startup** — Hyderabad, India
  Software Development Intern — *May 2017 - August 2017*
  - Built a mobile app from scratch for their web-based services using React Native, Fetch API and Android Studio.
  - Currently live on the respective app stores with more than 10,000 downloads.
- **International Institute of Information Technology** — Hyderabad, India
  Teaching Assistant — *Fall 2017 and Spring 2019*
  - **Courses :** Computer Vision (Spring 2019) and IT Workshop (Fall 2017)

Projects

- **Mini SQL Engine** Built an SQL engine in Python that could parse and execute a subset of SQL commands, along with relevant error handling.
- **Proxy Server** A computer networks course project to implement a server that acts as a proxy between the Internet and a computer. Made to handle both HTTP and HTTPS connections.
- **Variable Quantized Ensemble Networks (under review - WACV 2020)** — Pytorch, Tensorflow
  - Research project to achieve real-time semantic segmentation through variable quantization of ensembles of neural networks, trained on pre-determined groups of classes of popular datasets like Cityscapes and Indian Driving Dataset.
  - Application of method on state of the art semantic segmentation models like PSPNet and Deeplab-v3+ showed acceptable reduction in accuracy for large improvements in inference time and memory usage.
- **AngelSafe** — Google Maps API, Angular JS, Express
  - Designed and implemented a website focused on promoting safety of women during travel by making use of crowdsourced data to generate heat maps representing the level of danger in a particular area.
  - Secured first place in the online round of the Code.Fun.Do hackathon organized by Microsoft India in Hyderabad.
- **Driving scene analysis (with Microsoft Research India)** — Android Studio, Tensorflow Lite
  - Responsible for building an Android app incorporating Tensorflow Lite to analyze videos of drivers in real-time.
  - Compression of existing state-of-the-art models and exporting to the app to test performance.
- **Multiple Computer Vision projects** Done as part of coursework, these projects ranged from optical flow analysis to cartoon colorization and compared results from both deep learning and traditional computer vision techniques.

Technical Skills and Relevant Courses

- **Programming Languages**: C++, Python, Javascript, SQL, Java, Bash
- **Libraries and Tools**: React/React Native, Node JS, Android Studio, PyTorch, scikit-learn, OpenCV, Keras
- **Relevant Courses**: Software Engineering, Database Systems, Computer Vision, Principles of Programming Languages, Distributed Systems, Algorithms, Digital Image Processing, Statistical Methods in AI