Aaron Jacob Varghese

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Education

- **Boston University** — Boston, MA
  Master of Science in Computer Science — *Expected December 2020*
- **International Institute of Information Technology (IIIT-H)** — Hyderabad, India
  Bachelor of Technology in Computer Science and Engineering (Honors in Computer Vision) — *August 2015 - April 2019*

Experience

- **Intel Corporation** — Bangalore, India
  Machine Learning Intern — *June 2018 - July 2018*
  - Performed an 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 Berkeley Deep Drive Dataset and Indian Driving Dataset
- **Center for Visual Information Technology, IIIT-H** — Hyderabad, India
  Undergraduate Researcher — *May 2017 - May 2019*
  - Led and contributed to 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, culminating in a research paper submission
  - Collaborated closely 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 Froogal's web-based services using React Native, Fetch API and Android Studio
  - Released on Google's Play Store and Apple's App Store with more than 10,000 downloads
- **International Institute of Information Technology** — Hyderabad, India
  Teaching Assistant — *August 2017 - April 2019*
  - **Courses :** Computer Vision (Spring '19) and IT Workshop (Fall '17).

Projects

- **Distributed TicTacToe and chat room**
  - Developed a distributed TicTacToe game, in a client-server setup using the Java RMI protocol
  - Parallelized the game server to handle multiple games, along with a chat server for multiple clients/client groups
- **Mini SQL Engine** Developed an SQL engine in Python to parse and execute a subset of SQL commands, along with relevant error handling
- **Variable Quantized Ensemble Networks (under review at WACV'20)**
  - Research project to achieve real-time semantic segmentation through variable quantization of ensembles of neural networks, trained on pre-determined groups of classes of Cityscapes Dataset and Indian Driving Dataset
  - Applied proposed method to state-of-the-art semantic segmentation models PSPNet and Deeplab-v3+, showing an acceptable reduction in accuracy for large improvements in inference time and memory usage
- **AngelSafe**
  - Designed and implemented a website focused on promoting safety of women during travel by making use of crowdsourced data to generate heat maps representing threat levels in a particular area
  - Secured first place in the Code.Fun.Do hackathon organized by Microsoft India in Hyderabad
- **Driving scene analysis (with Microsoft Research India)**
  - Developed an Android app using Tensorflow Lite to detect drivers facial expressions and actions in real-time
  - Compressed and exported neural networks trained on custom data to the app to generate performance data
- **Multiple Computer Vision and Graphics projects** Developed multiple applications including a cartoon coloring app, optical flow predictor and a standalone game in Unity3D

Technical Skills and Relevant Courses

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