

# Aaron Jacob Varghese

<https://arn197.github.io>

Email : aaronjacobmscs@gmail.com

Mobile : +971 562928626 (Temporary)

## EDUCATION

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- **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

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- **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

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- **Mini SQL Engine** Built an SQL engine in Python that could parse and execute a subset of SQL commands, along with relevant error handling.
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- **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.

## TECHNICAL SKILLS AND RELEVANT COURSES

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- **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