

Reuben Varghese

Senior Year B.Tech Student
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Research Interests

Computer vision , Human-Computer Interaction, Robotics, Internet of Things

Education

- **VIT University** Chennai,India
Bachelor of Technology in Computer Science and Engineering; 2015 – 2019
- **R.N. Podar School** Mumbai, India
12th Grade(CBSE); 2013 – 2015
- **Thakur Public School** Mumbai, India
10th Grade(ICSE); Among top 5% in the country 2003 – 2013

Experience

- **Summer Internship at RedHat** May 2018 - Current
 - Working with the CloudForms Management Engine(CFME) team at RedHat Pune, India
 - Working on smart cloud infrastructure provisioning using machine learning.
 - Working on end to end testing of ManageIQ cloud management platform.
- **Developer and Release Manager at OpenMRS** Dec 2016 - Current
 - Dev 3 Software Developer and Scrum Leader at OpenMRS
 - Member of the OpenMRS developer community. Have been the scrum leader of daily Scrum meetings since Dec,2016. I have fixed 15+ bugs and added many new features.
 - Currently the release manager for the next OpenMRS Ref App 2.9 Release.
- **Google Summer Of Code** May 2017 - Sep 2017
 - Worked as software developer at OpenMRS
 - Worked with some of the leading researchers in the field of medicine from research institutes like Regenstrief Institute, Partners In Health.
 - Developed the official module repository for OpenMRS. Replaced the older module repository with a completely Automatic index which therefore requires very little maintenance as opposed to the older repository which involved a lot of manual labour. Devised a Spring-Boot application and designed many Rest APIs which populate the UI. The Rest APIs are also being leveraged by the huge number of OpenMRS developers and implement. OpenMRS modules were also migrated to Bintray for automatic module deployment. The production server may be accessed here
- **Technocrats Robotics** May 2016 - Dec 2016
 - Technocrats is VIT's official robotics team that represents the university at Robocon.
 - Led a team of 10 programmers. Assembled and coded various components in the robot including an auto self aligning line following robot using Cytron MD 10-C motor drivers and Cytron LSA-08 Line detecting sensor. Worked on the robot that represented the college at Robocon 2016 which had one automatic bot and one manually controlled bot. Devised and programmed the wheel drive of the robot
- **Freelance developer** Nov 2015 - Feb 2016
 - Freelance web and app developer

- **Cyclone Taxi Android app:** Developed for an international client (Australia). Designed a single android app that could be used by both drivers and customers to create, manage, track bookings real-time. Also included real-time location tracking of the taxi.
- **Cyclone Taxi web app:** Made the Cyclone web app. Also helped the client deploy the app on multiple test servers. The web app acts as both the server for the Android app data and also as a web client app

Research Experience

- **Transforming Auto-Encoder and Decoder Network for Pediatric Bone Image Segmentation:** Nov17 -Current
 - For improving accuracy, image segmentation has been performed for extracting the region of interest(in this case, the carpus, metacarpals, phalanges, radius and ulna). The radiograph also contains other forms of noise which is removed as well. A state-of-the-art auto encoder-decoder network is trained and the output is compared with that from the currently widely used Unet .
 - **Accepted for publishing by IEEE in August 2018.**
- **Determination of Knee Osteoarthritis Severity using Deep learning:** Aug 2017 - Current
 - Convolutional neural networks require a lot of images as training data. Since obtaining such a large amount of medical data that is labelled by experts is very expensive and difficult, we apply transfer learning to existing public medical datasets.
 - This research focuses on fine tuning the latest Imagenet pre trained model NASNet by Google followed by a CNN trained using knee radiographs in order to achieve maximum accuracy in determining the severity.
 - The expected outcome is to build a model that performs better than existing models in predicting the severity.
- **Affordable Smart Farming Using IoT and Machine Learning:** Dec 2017 - June 2018
 - Developed affordable smart farming modules which have been deployed to several farms near my university.
 - Achieved an accuracy of 82% in the prediction of the condition of the crop.
 - **Accepted for publishing by IEEE in May 2018.**

Projects

- **CHAI:** A Retrieval based chatbot using Deep Learning
- **Equilibrium:** Custom CPU governor for Android OS based on Hotplug
- **Optiplant:** An optimal plant growth solution using IOT
- **Ujala :** An Energy efficient complete automation of appliances
- **Comparison shopping engine based on Django framework:** A price comparison website that scrapes the web and uses machine learning to get the best prices for the product being searched.
- **VIT Research Portal :** The website for all VIT research papers. The development server is located link

Programming Skills

- **Languages:** Python, Java, Javascript, C/C++, SQL, XML, Matlab, Octave, x86 assembly language
- **Technologies:** AWS/Google cloud, React, Spring-Boot, Maven, CI, Intel AI Devcloud, Docker, Elasticsearch
- **Libraries and frameworks:** TensorFlow, Scikit, Keras, Theano, Numpy, Django, Volley, Materialize, Bootstrap, React
- **OS and Devices:** Linux(Arch), Windows, Arduino , Raspberry PI 3, Beaglebone Black

Other Activities

- Represented my university at Robocon 2016
- Ranked 256 in International English Olympiad, 2012
- Secured 2nd place in under 15 state level Badminton tournament