

Reuben Varghese

Third Year B.Tech Student
Computer Science And Engineering
VIT University

Webpage : <http://www.reubenvarghese.me>

Email : reuben.varghese2015@vit.ac.in

Mobile : +91-9790708970

Research Interests

Robotics, Computer vision , Machine learning, Medical Image Analysis

Education

- **VIT University** Chennai,India
Bachelor of Technology in Computer Science and Engineering; 2015 – 2019
 - Cgpa: 8.45/10.00; Top 10% of the class
- **R.N. Podar School** Mumbai, India
12th Grade; Percentage: 87.68; 2013 – 2015
- **Thakur Public School** Mumbai, India
10th Grade; Percentage : 93.36; Among top 5% in the country 2003 – 2013

Experience

- **Developer at OpenMRS** *Dec 2016 - Current*
 - *Dev 2 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.
- **Google Summer Of Code** *May 2017 - Sep 2017*
 - 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 2017 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*
 - **Cyclone Taxi Android app:** Designed an android app which served a dual purpose. It served a different set of views when it detects a user login and different set of views when a driver logs in. It also allowed users to create/cancel bookings , view/track the driver location. It helped the driver to accept bookings and charge the customer a fixed rate. Utilized libraries like Volley and Retrofit for parsing Json data from the server. This data was then inflated into the UI.
 - **Cyclone Taxi web app:** Devised the Cyclone web app for a client from Australia. Implemented with PHP , Mysql, JQuery, Bootstrap-V3. 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

- **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.
- **Novel method for pediatric bone age detection using deep CNN:** Nov 2017 - Current
 - We will train a full end-to-end deep convolutional network with pre-initialized weights instead of using random weights.
 - The model will have an architecture similar to that of Google's Inception V3.
 - A U-Net is used for pre-processing the and creating hand masks using image segmentation. These masks will be used to extract the hands from the images. Thereafter, the images are fed into the network. The softmax layer is replaced so as to give a regression output.

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
- **PITCH Android App:** A complete event management solution that lets you design an app for your event from within the parent app itself with no prior programming knowledge!

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

Achievements, Hobbies and Interests

- Represented my university at Robocon 2016
- Ranked 256 in International English Olympiad, 2012
- Secured 2nd place in under 15 state level Badminton tournament
- Android App and OS development, Puzzles, Badminton, Playing the guitar