Surya Penmetsa

Resume

Education

2011–2015	**B.Tech**, *NIT Warangal*, Electronics and Communication Engineering, *GPA: 8.61/10, GRE: 330*.
2009–2011	**Inter**, *Sri Chaitanya*, Maths, Physics and Chemistry, *IPE: 94.2%, AIEEE All India Rank: 1130*.

Research Experience

July 2016 - October 2016 **Part Time Engineer**, *Srujana Innovation Center, LV Prasad Eye Hospital*, India.
The project aims to build a portable hand-held corneal topographer. I implemented an algorithm to reconstruct the corneal topography from a placido ring image.

May 2014– April 2015 **Undergraduate Thesis**, *DRDO and NIT Warangal*, India.
The project aims to develop chirp scaling and range doppler algorithms for raw SAR data processingand comparision in terms of accuracy, resolution and time complexity.

Summer 2014 **Research Intern**, *Dept. of Medical Informatics, Uniklinik RWTH Aachen*, Germany.
The project aims to guide visually impaired people with the help of smartphones and imaging techniques
- Reconstructed a three-dimentional model representing the route using Structure for Motion (SfM)
- Used this model to locate of precise position of the user by matching the features using RANSAC

Summer 2013 **Research Intern**, *Aerospace Department, IISc Bangalore*, India.
The project aims to design a system for the identification and classification of suspicious activities performed by people in a crowd with images captures from Autonomous UAV
- Located humans using pose estimation using weak constraints on position and image parsing
- Proposed Hough Orientation Calculator (HOC) to flag the estimated pose as suspicious or not

Other Experience

2016 **Founder**, *Game Automators*, Innovation Garage, NIT Warangal.
Started Game Automators to make concepts of electronics, image processing and machine learning fun.
- Trained more than 80 students at NIT Warangal on how to automate games by mentoring students during winter internship, Hackathon 5.0, Workshop with ECEA and various other independent events.
- Raised Rs. 85,000 through Lakhya's crowdfunding platform to make all the work open source and free.
- Wrote a book with my co-founder Sudheesh Singanamalla and more than 30 contributors.
- Talk given by my co-founder Sudheesh at ASIA's biggest open source conference, FOSSASIA 2016.

2016 **Teacher**, *Stanford Crowdcourse Initiative*.
I was a part of the team that made the first course on Introduction to Python (7 modules) on this platform. (Link)
- Made on the content for the module 1.
- Gave the voice over and edited the videos for Module 2, 3, 4 and 6.

2014 **Intern**, *Bootcamp by MIT Media Lab*, India.
Designed a low cost device that can quantify the red reflex of the eye to assist in distinguishing a normal eye and a pathology by comparing the histograms.

Publications and Books

2016 **Surya Penmetsa, Sudheesh Singanamalla**, *"Building Mobile Game Solvers"*, Self Published, (Link).

2015 **Book Reviewer for**, *"Arduino Computer Vision Programming"*, PACKT Publishers, (Link).

2014 **Surya Penmetsa, Minhuj Fatima, Amarjot Singh, S.N. Omkar**, *"Autonomous UAV for Suspicious Action Detection using Pictorial Human Pose Estimation and Classification"*, Electronic Letters on Computer Vision and Image Analysis, v.13, n.1, jun.2014. ISSN 1577-5097 (Link).

Online Courses Completed

2015 **Introduction to Biomedical Imaging**, *The University of Queensland*, edX.
The course covers how medical imaging technologies are complementary and what information they provide to health professionals. (certificate)

2015	**Data Science and Machine Learning Essentials**, *Microsoft* , edX.
	The course consists the key concepts of data science and machine learning with examples on how to build a cloud data science solution with R, Python and Azure Machine Learning. (certificate)
2015	**Machine Learning**, *Stanford University*, Coursera.
	This course provides a broad introduction to machine learning, datamining, and statistical pattern recognition.
2014	**Autonomous Navigation for Flying Robots**, *TU Munich*, edX.
	This course helps you learn how to infer the position of the quadrotor from its sensor readings and how to navigate it along a trajectory. (certificate)
2014	**Digital Image and Video Processing**, *Northwestern University*, Coursera.
	This course will cover the fundamentals of image and video processing including fourier transform, sampling, motion estimation, image and video enhancement, recovery and compression. (certificate)
2013	**Writing in the Sciences**, *Stanford University*, OpenEdX.
	This course teaches scientists to become more effective writers, using practical examples and exercises. (certificate)
2013	**Control of Mobile Robots**, *Georgia Institute of Technology*, Coursera.
	The course teaches you how to make mobile robots move in effective, safe, predictable, and collaborative ways using modern control theory. (certificate)
Others	**and 40 more (click here)**.

Projects

Note	Clicking the name redirects you to the project demonstration/page.
2015	**Automating Mobile Games**, The following games (and many more) have been solved automated in a way that they are played without human intervention using concepts of electronics and image processing.
	Arduino Plays Piano Tiles, Paper Toss, Draw A Box, Stick Hero, Sudoku Free
2015	**Retinal Image Processing**, Localizing the optical disc using histogram matching.
2014	**Motor Vehicle Black Box**, Device that logs all the critical events in a vehicle for future use.
2014	**ECG Signal Processing**, Detecting the R-peaks using pipeline stages.
2013	**Robotic Head**, A webcamera that can track human faces. (using OpenCV and Arduino).
2013	**Gesture Sensing Wrist Band**, Device that can aid you play small games using gestures.
2013	**Electronics Week**, I decided to spend all my free time for a week working on circuits.
	Here's what I built- Introduction, Metal Detector Circuit, Memory Game, Room Status Indicator, Virtual Piano using Glove, Wireless Energy Transfer, Virtual Keyboard
2013	**Home Automation**, Home appliances have been controlled various methods.
	Internet Based Home Automation, Speech Controlled Home, Remote Controlled Home
2012	**Game Programming**, Programmed various games using Allegro with C++.
	Dave Clone, Picking Sticks, Out Out, Snake, Bullets, Maze Solver Simulation

Skills

Launguages	MATLAB, Python, R, C++, PHP
Packages	OpenCV, PIL, Azure ML, Theano, TensorFlow, scikit-learn, Arduino, Processing, LaTeX

Additional Activities

Positions Held, (organised events, co-ordinated meetings, conducted workshops).
- Additional Secretary for ECE Association, NIT Warangal (2014-15)
- Technical Secretary for IEEE, NIT Warangal (2013-14)
- Joint Secretary for ECE Association, NIT Warangal (2012-13)

YouTuber, I manage the YouTube channels - The Motivated Engineer (1.5 million views) and My Viewpoint.

Podcaster, I am the creator and host for the Students Productivity Podcast (1,000 listens).

Online Teacher, I love teaching online to explain things in a easy way. Some of my tutorials are below.
OpenCV with Python for Beginners, Image Processing using MATLAB (Tutorial Series), Building Electronic Circuits (Tutorial Series), mexopencv Tutorial Series,Network Simulator - 3 Tutorial Series

Animator, I enjoy using animations in videos to explain interesting concepts. Here's some of my work.
Will People Continue To Break World Records, Why Take An Online Course, The Hot Hand Fallacy, Can We Become Invisible, What is the Color of the Dress