



# ASWIN RAGHAV NIRMALESWARAN

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## EDUCATION

**Cornell University, School of Engineering**, Ithaca, NY

Master of Engineering (M.Eng) in Biomedical Engineering,

Expected May 2017

**University of Texas at Arlington, School of Engineering**, Arlington, TX

Master of Science in Biomedical Engineering,

Cumulative GPA: 3.667/4

Jan 2016 - May 2016

(Transferred to Cornell)

**Anna University, SSN College of Engineering**, Chennai, India

Bachelor of Engineering in Biomedical Engineering,

Cumulative GPA: 7.4/10

Aug 2011- May 2015

## PATENTS

### MULTISYRINGE MODEL- JECTABLE

India Patent Application 5847/CHE/2014

### ELECTROMAGNETIC VASCULAR FORCEPS

India Patent Application 5848/CHE/2014

## PROJECTS

- **Segmentation of Skin Lesions using Combined Adaptive Thresholding and Connected Component Analysis** (3<sup>rd</sup> best project award-during the course 'Computer Vision' at Cornell)  
Developed a novel algorithm (from a training dataset of 900 clinical dermoscopic images) to efficiently detect skin lesions.  
**Skills and Expertise:** Computer Vision (2D Color clustering, Adaptive Snake, Otsu's method) - using VisionX & C, MATLAB.
- **Automated Anatomical Landmark Detection in 3D Chest CT images** (Current project)  
Design, develop, and evaluate algorithms that will reliably detect unique locations including sternal notch & the junction between the heart and aorta. Second stage of algorithm will be to identify the desired candidates.  
**Skills and Expertise:** Image Processing using VisionX & C
- **Observation and Identification of Erythrocyte Cell Membrane Vibrations for Differential Diagnosis**  
Invented a Diagnostic technology involving Cell vibration (due to thermal excitation) tracking using Kalman filter.  
**Skills and Expertise:** Image Sequence(Video) and Signal Processing using Matlab, SIMULINK; Fluorescent Microscopy.
- **Design and 3D Printing of Tracheal Scaffold**  
Development of Scaffold which aids in Directional Cell growth & suture-less implantation  
**Skills and Expertise:** DS- SOLIDWORKS, Replicator-G, Image-J.
- **Design of Multisyringe Model- JECTABLE**  
A multi-injection pen which features reduced needle-pricking, Less manufacturing cost, Increased shelf life of drugs.  
**Skills and Expertise:** CATIA v5
- **Automation and Redesigning of Vascular Clamps/Forceps**  
Electromagnetic forcep which is electronically controlled by the surgeon  
**Skills and Expertise:** CATIA, ARDUINO- Atmega 328 microcontroller, PCB design- H bridge & ULN2004 circuits
- **Portable Device for the treatment of Postpartum Hemorrhage**  
An automated electronic device that induces blood coagulation non-surgically in PPH patients.  
**Skills and Expertise:** Electromagnetic coil & circuit design, Charged particle theory, Hematology.

## HONORS AND AWARDS

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- Ranked amongst one of the top 5 finalist in GE EDISON CHALLENGE 2013, Bangalore, India.
- Ranked among one of the top 20 venture proposals in ASSOCIATION OF BIOTECHNOLOGY LED ENTERPRISES- BEST 2014, Bangalore, India.
- Elected Speaker, Best 5 student papers in IEEE GLOBAL HUMANITARIAN TECHNOLOGY CONFERENCE 2014 - October 2014 at San Jose, California.
- Ranked amongst the top 150 semi-finalist teams in "BIG-C COMPETITION 2014" by Livestrong Foundation.
- Awarded best paper in National level Technical Conference on Bioengineering 2014 at Bharath University, India.

## RELATED EXPERIENCE

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### HEALTHCARE TECHNOLOGY INNOVATION CENTER, Chennai, India

May- December 2015

#### **Biomedical/Electrical Engineer Intern**

- **WEARABLE design**- using Freescale K53 MCU (Arm Cortex M4-100Mhz) & IAR Workbench
- Estimated the relationship between core body temperature & body's surface parameters- Regression of collected dataset from 500 people(appx). #Algorithm development
- Body Fat percentage estimation using Body Impedance. #Biosignal Acquisition using NI- ELVIS 2, NI- DAQ

### SSN RESEARCH CENTER, Chennai, India

May-December 2015

#### **Research Assistant**

Design, control and automation of custom temperature controller setup (involving LABVIEW, myRIO and circuit design) for Crystal Growth Research; #Signal Conditioning #Feature extraction #PID controller design

### THE MEDICARE SCIENTIFIC SUPPLIES, Chennai, India

Sept 2012- Jan 2015

#### **Design and Development Engineer- Part time**

Design & automation of optical filter setup in Professional gel documentation system named **Gelstan 4X/8X Chemi**

### SAKTHI HOSPITAL & RESEARCH CENTER, Chennai, India

Oct- Nov 2014

#### **Biomedical Engineer Intern**

Descriptive Study on Post-maternity; for designing an automated portable device to treat Postpartum Hemorrhage.

### HELIX CORPORATION, Bangalore, India

September 2012 (1 week)

#### **Biomedical Engineer Intern**

Testing and calibration of Bio-medical testing equipment

## OTHER EXPERIENCE

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### CORNELL UNIVERSITY, Ithaca, NY

#### **Lab Assistant**

PHYS 2213: Electromagnetism

August 2016- Dec 2016

PHYS 2214: Oscillations, Waves, and Quantum Physics

Current position

PHYS 1112: Mechanics & Heat

Current position

### GEEKYCROC, Chennai, India

May 2015- Present

#### **Founder- [www.geekycroc.com](http://www.geekycroc.com)**

- College life experiences turned into a working E-commerce Business involving Textbooks, Consulting and material-supply for Higher education, Food review, Travel agency etc only for College Students;
- Also formed a network and logistics division; convinced clients for partnership; Annexed local businesses as a part.

### BHUMI, a Non-governmental Organization, India

May 2013- June 2015

#### **HR Manager & Teaching Volunteer**

Management of events and coordinating volunteers for teaching students of class 6,7,8.

## OTHER SPECIALIZED SKILLS

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#### **Languages**

C,Java, JSP- Basics, Javascript, SQL, HTML-CSS, Python, Matlab, LABVIEW

#### **Tools**

Adobe Photoshop, Multisim, Office, SIMULINK, Adobe Lightroom, Adobe Aftereffects, FL Studio, Audition, SOLIDWORKS

#### **Languages**

Fluent in Tamil and Hindi