# ASWIN RAGHAV NIRMALESWARAN

317, S Cayuga St, Apt #1S, Ithaca, NY 14850
an539@cornell.edu • 682 230 0992 • www.linkedin.com/in/aswinraghav • https://an539.github.io/

## 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,                                      Jan 2016 - May 2016
Cumulative GPA: 3.667/4                                      (Transferred to Cornell)


**Anna University**,**SSN College of Engineering**, Chennai, India
Bachelor of Engineering in Biomedical Engineering,                                      Aug 2011- May 2015
Cumulative GPA: 7.4/10

## PATENTS

**MULTISYRINGE MODEL- JECTABLE**
India Patent Application 5847/CHE/2014

**ELECTROMAGNETIC VASCULAR FORCEPS**
India Patent Application 5848/CHE/2014

## PROJECTS

- **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

- **Segmentation of Skin Lesions using Combined Adaptive Thresholding and Connected Component Analysis** (3$^{rd}$ 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.

- **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

- Ranked amongst one of the top 5 finalist in <u>GE</u> EDISON CHALLENGE 2013**,** Bangalore, India.
- Ranked among one of the top 20 venture proposals in <u>ASSOCIATION OF BIOTECHNOLOGY LED ENTERPRISES</u>- BEST 2014, Bangalore, India.
- Elected Speaker, Best 5 student papers in <u>IEEE</u> 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 <u>Livestrong Foundation</u>.
- Awarded best paper in National level Technical Conference on Bioengineering 2014 at Bharath University, India.

## RELATED EXPERIENCE

**HEALTHCARE TECHNOLOGY INNOVATION CENTER**, **Chennai, India**                              May- December 2015
*Biomedical/Electrical Engineer Intern*

- **<u>WEARABLE design</u>-** 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 MEDICCARE 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

**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*

- 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 |