SHREYASVI NATRAJ

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RESEARCH EXPERIENCE

- **CERN**
  Openlab Summer Student | Supervisors: Francois Grey, Sofia Vallecorsa, Lars Bromley |June 2017- August 2018
  - Working on AI and Crowdsourcing in order to analyze UNOSAT satellite images and tag images related to disaster response.
- **CERN (Remote Project)**
  Independent Remote Research Project | Supervisor: Archana Sharma |October 2017- March 2018
  - Did simulations using Garfield++ to produce gas tables for Argon-Carbon Dioxide gas mixture and determine ionization and excitation rates.
  - Used ionization and excitation rates to determine gain curve and find transfer probability and penning effect.
  (Ref. Dr.Archana Sharma, archana.sharma@cern.ch)
- **HUMAN COMPUTER INTERACTION INSTITUTE (CARNEGIE MELLON UNIVERSITY) (Remote Project)**
  Independent Remote Research Project | Supervisor: Mayank Goel| August 2017 – February 2018
  - Developed and fabricated a CMOS sensor/filter to carry out UV light imaging of teeth to determine oral health
  - Implemented SIFT/SURF, RANSAC, rasl and homography (OpenCV) in order to align the images taken by the camera
  (Ref. Dr. Mayank Goel, mayankgoel@cmu.edu)
- **SUSTAINABLE DEVELOPMENT GOALS (SDG) SUMMER SCHOOL (Geneva, Switzerland - Beijing & Shenzhen, China)**
  Summer Research Student | University Of Geneva, Tsinghua University| July 2017 – August 2017
  - Implemented multiple machine learning models for object detection with database linkages for accurate trash classification and sorting.
  - Successfully launched and completed a crowdsourcing campaign and developed a portable low cost scanner for carrying out text detection and OCR for archive documents at UNOG, Geneva using multiple computer vision APIs.
  - Worked on making a serial peripheral interface for Lattice ICE40HX8K-Raspberry Pi communication in VHDL for a low cost cosmic ray detector project called cosmic pi .
  (Ref. Francois Grey, francois.grey@unige.ch), (Ref. James Devine, james.dilwyn.devine@cern.ch), (Ref. Colin Wells, cwells@unog.ch)
- **SRISTI UNICEF SUMMER SCHOOL 2017 (NATIONAL INNOVATION FOUNDATION) (Ahmedabad, India)**
  Summer Research Student | National Innovation Foundation, Govt. Of India | May 2017 – June 2017
  Developed a low cost toxic gas detector using Arduino Nano and MQ7 gas sensor for prevention of casualties of salt farmers due to toxic gas leakages in Rann Of Kutch region in Gujarat. *(Ref. Prof. Anil K Gupta, anilg@iima.ac.in)*
- **STANFORD SCHOLAR INITIATIVE (Remote Project)**
  Stanford Scholar Initiative Student | Stanford University| January 2017 – April 2017
  Developed research talks on several renowned research papers for the Stanford Scholars initiative program.
  (Ref. Rajan Vaish, rvaish@cs.stanford.edu)
- **GRAVIKY LABS (MIT MEDIA LAB OFFSHOOT) (Bangalore, India - Hong Kong)**
  Research Internship | Graviky Labs, Bangalore | May 2016 - August 2016
  - Developed the electrical system for Electro-mechanical exhaust plug-in device to capture PM 2.5 for being processed and converted into ink called Air-Ink
  - Project documentary shot in Hong Kong & awarded with Shell 'Make the Future' Accelerator and Cannes Golden Lion Innovation Award.
  (Ref. Anirudh Sharma, anirudhs@mit.edu)

WORKSHOPS

- **MIT MEDIA LAB - L.V. PRASAD EYE INSTITUTE (Hyderabad)**
  Engineering the Eye 16' Participant | L.V. Prasad Eye Institute, Hyderabad | 14 days (August 2016)
  - Worked on a miniaturized corneal topography attachment for a smartphone to detect presence of corneal disorders at an early stage called BullsEye.
  - Awarded Tej Kohli Corneal Institute (TKCI) Srujana Innovation Award & certificate of team excellence.

EDUCATION

- **BACHELOR OF ENGINEERING**
  Bangalore, Karnataka, India, 560059 | 2015-2019
  Rashtreeya Vidyalaya College Of Engineering - CPGA 8.34/10
- **HIGH SCHOOL**
  Kullu, Himachal Pradesh, India, 175125 | 2000-2014
  Dayanand Anglo Vedic Public School - 9.8 CGPA (10th Grade, Top 1 % in state) & 84% (12th Grade)

PROJECTS

- **Abbie (AR/VR Sensor Based roBot for Intuitive Exploration):** Used Google project tango based area learning and raspberry pi to build an autonomous small scale vehicle. *(Provisional Patent Filed, Ref. No. E-2/1224/2017-CHE Application No: 201741015905)*
- **STB (Smart Toothbrush):** Developed a Toothbrush whose bristles automatically detaches upon subjection to a particular duration of mechanical forces to help people know right time to replace toothbrush head. *(Provisional Patent Filed, Ref. No. E-2/1225/2017-CHE, Application No.:201741015906)*
- **Casie (Context Acquired detail Sensing in Indoor/outdoor Environment):** Implemented a pseudo deep-learning model to compare results from multiple machine learning models for emotion analysis using voice and image. *(Provisional Patent Filed, Ref. No. E-2/1226/2017-CHE, Application No: 201741015907)*
- **Pam (Purification Actuating Module):** Prototyped a floatation device for stagnant water purification using vacuum pump suction, porous membrane filtering as well as self balancing using custom made gyroscope. *(Provisional Patent Filed, Ref. No. E-2/1227/2017-CHE, Application No:201741015908)*
- **Kapok Fibers:** Synthesized a fibrous biomaterial that can be used for separation of emulsion components with maximum efficiency and for a longer duration.
- **Low cost miniaturized bacteriological culture incubator:** Used microcontroller regulated peltier heating as well as thermocol box in order to create a low cost miniaturized bacteriological culture incubator.

SKILLS

Hardware: VHDL, Xilinx Vivado, Lattice IceCube, Bio-Sensor design	**OS:** Windows, Ubuntu, Debian, Kali Linux
Programming: C++, C, Matlab, Python, VHDL, OpenCV, Tensorflow	**Platforms:** Raspberry Pi, Arduino/AVR, Intel Edison, Lattice iCE40-HX8K
Modelling Tools: SketchUp, SolidWorks	**Others:** Photoshop CC, Premier Pro CC

ACCOMPLISHMENTS

- **Awards:** Awarded as "student with extraordinary achievements" award by the college, SRISTI UNICEF 2015 Award Winner, National Entrepreneurship Challenge 2015/16 Winner, MIT Media Lab-LVPEI Certificate Of Team Excellence
- **Competitions:** Microsoft Imagine Cup Top 10 Pitches, Future Ideas 2015 worldwide competition finalist, KPIT Sparkle 2017 Finalist, KPIT Sparkle Promising Innovator 2015, Shell Ideas 360 2015/16 Stage 2 Qualifiers, Airbus Fly Your Ideas Round 2 Qualifiers 2015, Google Science Fair 2013, 2014, 2015, 2016 Participant, Valeo Innovation Challenge 2016 Participant, Shell Ideas 360 2016/17 Participant
- **College & School:** Former National Entrepreneurship Challenge team member, attended DST INSPIRE SEATS program and INSPIRE Internship Program organized by the central government for top 1% students of the state, Won second prize in physics quiz among to top 1% students during the INSPIRE SEATS Program
- **Communities:** Part of Google Developers Group Bangalore and Singularity University Bangalore Chapter.