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Tanuja Sawant

Education

Aug'13-June'18 **B.E. (Hons.) Computer Science & M.Sc. (Hons.) Physics** *BITS Pilani, K. K. Birla Goa Campus, India* **CGPA: 8.09/10**

Work Experience

Jan'18-June'18 **Research Intern, Technology for Emerging Markets Group, Microsoft Research, India**
Designing for people with Vision Impairments supervised by Dr. Manohar Swaminathan
- Developed an RPG video game with accessibility features for the vision impaired using C# & Unity3D
- Prototyped and built novel 3D spatial audio interfaces for people with vision impairments using HoloLens
- Conducted user studies and experimental validation of built prototypes

Aug'17-Dec'17 **HCI Intern, VIA HCI Group, Télécom ParisTech, Paris, France *Link to Project***
Tactibits: Tactile Modules for Touch Pattern Generation supervised by Dr. Eric Lecolinet
- Built tactile modules that simulate social touch by pattern generation using ATtiny and Arduino
- Constructed prototypes by using thermoelectric modules, vibration motors, h-bridges & shift registers
- Designed a user experiment to research how the vibrotactile and thermal characteristics of the touch modality can serve to leverage emotions using Unity, I2C communication and Uduino plugin

May'16-July'16 **Research Intern, Bhaskaracharya Institute of Space Applications and Geoinformatics, Gandhinagar, India *Link to Project***
Object-based Image Analysis & Change Detection supervised by Dr. Manoj Pandya
- Developed a Python script for object-based classification and change detection of bitemporal satellite images using scikit-learn, SciPy, GDAL and matplotlib
- Implemented and assessed accuracy of Random Forests, PCA, SVM, and Multivariate Alteration Detection
- Achieved an accuracy of 97.7 % using Random Forest algorithm

May'15-July'15 **Research Intern, Physics Department, Indian Institute of Science *Link to Project***
Experimental Setup of Optical Tweezers supervised by Dr. Vasant Natarajan
- Constructed an inexpensive optical tweezers setup to trap and image polystyrene beads using class 3 IR laser
- Reduced cost by 80 % by formulating efficient experimental setups using inverted microscopes & optical fibres

Projects

Mar'17-Apr'17 **Smart Poster - Android App with NFC, QR code & AR interface *Link to Project***
Project Supervisor: Mr. Sreejith, Dept. of Computer Science, BITS-Pilani, Goa
- Developed an Android app that configures host website's redirection on scanning NFC tag/QR code
- Devised interactive AR object pop-ups of company items to enhance product marketing using Unity3D
- Designed a database and server to generate QR codes and track no. of website visitors using PHP & MySQL

Jan'17-May'17 **Elements of Effective Design and User Experience *Link to Project***
Project Supervisor: Dr. Geetha B, Dept. of Humanities, BITS-Pilani, Goa
- Explored application of effective design principles to improve product design by reviewing research articles
- 3D modelled the heritage site-St. Jacinto Church (Goa) using Agisoft Photoscan as the Photogrammetry tool

Aug'16-Dec'16 **Computational Neuroscience and Signal Processing**
Project Supervisor: Dr. Veeky Baths, Dept. of Biology, BITS-Pilani, Goa
- Classified SSVEP signals from EEG data obtained from a subject observing various LED frequencies
- Found that Frequency Domain Analysis performed better than Time Domain Analysis by 16 %

Mar'16 **Synthesis and Study of Quantum Dots (QDs)** ***Link to Project***

- Led a team of 3 members to synthesize quantum dots using hydrothermal treatment of bottom-up synthesis
- Studied UV light properties of Carbon & Graphene QDs using Spectrofluorometry and Cyclic Voltammetry
- Awarded Best Poster Award at ThinkNano Symposium 2016, Indian Institute of Science

Jan'16-May'16 **Astronomical Image Processing**

Project Supervisor: Dr. Kinjal Banerjee, Dept. of Physics, BITS-Pilani, Goa

- Captured, corrected and calibrated CCD images of celestial bodies using IRAF software
- Determined astronomical magnitudes of point sources using aperture photometry and CCDs

Nov'15-Jul'16 **Cooperative Spectrum Sensing in Cognitive Radio Networks** ***Link to Project***

Project Supervisor: Miss Rajalekshmi Kishore, Dept. of Electrical and Electronics, BITS-Pilani, Goa

- Developed an efficient hybrid of local sensing and cooperative spectrum sensing using Energy Detector
- Increased performance by devising better secondary user selection algorithm for Bayesian Detector in MATLAB
- Presented findings at the international conference-WiSPNET 2016, later published in IEEE explore

Aug'15-Dec'15 **Construction of a Rotating Table to trace the Trajectory of a Particle** ***Link to Project***

Project Supervisor: Dr. Toby Joseph, Dept. of Physics, BITS-Pilani, Goa

- Built a motor driven rotating table for studying fictitious forces and tracing particle trajectories
- Designed mechanics experiments & complied experimental results with calculations for coefficient of friction

Publications / Poster Presentation

March 2016 Kishore, R., Ramesha, C. K., Sawant, T.,"Superior Selective Reporting Mechanism for Co-operative Spectrum Sensing in Cognitive Radio Networks", Wireless Communications Signal Processing and Networking Conference, IEEE, Chennai, March 2016.

March 2016 Ramnath, S., Joseph, G., Sawant, T.,"Carbon & Graphene Quantum Dots - Synthesis and Application", Think-Nano Symposium, Indian Institute of Science, Bangalore, March 2016. **Best Poster Award**

Technical Skills

Programming C, C++, C#, JAVA, Python, MATLAB, HTML/CSS, JavaScript

Software Unity, Adobe Creative Suite, Sketch, Framer, Agisoft Photoscan

Prototyping Arduino, ATtiny84/85, Raspberry Pi

Positions of Responsibility

Aug'15-Aug'16 Mentored 15 multicultural college freshmen to achieve social, academic and personal success by conducting weekly in-person meetups as part of college's Peer Mentorship Program

Aug'15-Aug'16 Co-founded College's Compering Club, hosted 4 events for 2000 people

Jan'15-May'15 Teaching Assistant (TA) for the course *Computer Programming*

Achievements & Awards

March 2017 Among the top 15 of 100 candidates to be selected for scholarship to attend the Computational Data Sciences Conference 2017, Indian Institute of Science (IISc), Bangalore

March 2017 Won the football tournament as a member of Women's Football in Spree, India's biggest inter-collegiate sports festival

July 2016 Top 10 % among 500 applicants selected for the interdisciplinary Physics of Life 2016, Monsoon School held at National Centre for Biological Sciences (NCBS), Bangalore

July 2013 Awarded the INSPIRE-SHE Scholarship, Department of Science and Technology, Government of India

- Top 0.43 % among 1200000 students appeared for IIT JEE, India's most competitive engineering entrance
- Top 1 % among 1300000 students appeared in 12th Standard Examination of Maharashtra State Board