Ruchir Aggarwal

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EDUCATION

PURDUE UNIVERSITY | B.S. in Computer Engineering
College of Engineering | Expected May 2018 | West Lafayette, IN
• Dean's List (All Semesters) • Cum. GPA: 3.78 / 4.0

NATIONAL UNIVERSITY OF SINGAPORE | Semester Study Abroad
College of Engineering | Aug 2017 - Dec 2017 | Singapore, SG

SKILLS

PROGRAMMING
Advanced: Python • C • HTML
Intermediate: CSS • C++ • PHP • Assembly • System Verilog
Intro: Swift • C# • MySQL

HARDWARE:
• Digilent Nexys 4 based on Xilinx Artix 7 FPGA
• STM32F0 Micro-controller with Discovery Board

SOFTWARE:
• MATLAB •PyCharm • IntelliJ IDEA
•Xamarin • Microsoft Office • XCode
• Mentor GRAPHICS Questa Sim
• Keil MDK 4 • Xilinx Vivado 2015.2
• Eagle CAD

RESEARCH

SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP | Undergraduate Researcher
May 2017 – August 2017 | West Lafayette, IN

- Coordinated with Valeria Mijares and Prof. Margaret Gitau to create a Water Quality Index Calculator app which calculates and presents a visual analysis of Water Quality Index data
- Applied regression techniques to find the relation of water quality indices over time
- Reduced runtime of the app by 6 times by using scientific packages like numpy and pandas

PRESENTATION

SUMMER UNDERGRADUATE REASEARCH FELLOWSHIP SYMPOSIUM
| Presenter For DEVELOPMENT OF A WATER QUALITY STATUS AND TREND DETECTION TOOL*
Aug 2017| Purdue University, IN

- Introduced the software tool developed over the summer for analysis of water quality index data
- Discussed the architecture and how the software tool works through a live video

PROFESSIONAL EXPERIENCE

WATER RESOURCES AND ECOHYDROLOGIC ENGINEERING GROUP
| Undergraduate Computer Consultant
Jan 2018 – Present | Purdue University, IN

- Data management, analysis, andvisualization using Python, MATLAB, and R
- File management and improving runtime of computer models using Python
- Reporting and in-line comments for replicating study
- Automating scripts to help them run on Purdue clusters in single run

ELECTRONIC DEVICES AND DESIGN LABORATORY | Undergraduate Teaching Assistant
Jan 2018 – Present | Purdue University, IN

- Providing assistance to students in laboratory exercises and laboratory experiments
- Supervising 24 students at a time to ensure their adherence to appropriate laboratory safety procedures and techniques
- Performing tasks such as attending meetings, grading, and entering data into the computer

INGEN INFOTECH PVT. LTD. | Software Intern
May 2016 – August 2016 | Gurgaon, India

- Collaborated with a small group of highly skilled and experienced engineers to serve to IT needs of the local businesses
- Developed an app 'myLocalShoppe' using C# helping local businesses increase their market share and profits through online trans-actions
- Enhanced my knowledge of developing multi-platform applications for smartphones

ACADEMIC PROJECTS

SENSOSTICK

- Designed a walking stick for blind people to help them easilly navigate through Purdue campus
- Developed the PCB design to efficiently pack the hardware
- Helped the software leader with the coding of STM32f0 microprocesser to work with HC-SR04, Bluetooth, and Accelerometer with Gyroscope

ARM PROGRAMMING

- Built an ARM-like processor with Digilent Nexys 4 board based on Xilinx Artix7 FPGA using Xilinx Vivado 2015.2 WebPACK
- Coded processor to work with Data Processing, Memory and Branch instructions of the ARM v3 instruction set on the processor
- Improved performance by applying Booth's algortihm reducing the effective number of clock cycles for multiplication(MUL) instruction to half

PEOPLE.CONNECT

- Worked in a team of 3 students to design an addressbook app catered to businessmen
- Reworked the entire UI for an easier navigation of the app
- Added features for listing people by tags, converting phone numbers in the national convention and adding password to the address book
- Performed automated testing of the implemented features using Junit and gradle

RC4 DECRYPTION AND SOBEL EDGE-DETECTION

- Collaborated with 3 student to design an ASIC chip that RC4 decrypts and Sobel-Edge detects a given input image
- Ensured smooth data transactions through AHB-Lite and correct sobel-edge detection by writing Verilog code in Questa Sim
- Modified input method to edge-detection unit which improved the e fficiency of the process by 450%
- Developed my skills of performing simulations for a given verilog code by creating comprehensive test benches

SELF-PARKING CAR

- Responsible for the consistency of the design, engineering and installing interfaces between hardware and software
- Provided assistance to the software leader in developing working code for the car in Assembly and C
- Assisted calibrating quantitative infrared sensor readings to detect nearby objects accurately
- Presented in Purdue ECE Spark Challenge 2016

STEGANOGRAPHY

- Created Python module to embed/extract images into/from other images
- Reduced the execution time of the module by 7 times through vectorization
- Created a GUI using PySide and Qt that facilitated the code with drag-and-drop feature

RUBIKS CUBE SOLVER

- Worked in a team of 4 to create a Rubik's Cube Solver using Data Structures in Python
- Wrote code for the second stage which involved getting the right colors on the corners of the cube
- Helped create a GUI in MATLAB that simulated each step of the solution obtained from the algorithm

VOLUNTEER EXPERIENCE

ENGINEERING PROJECTS IN COMMUNITY SERVICE, CAMP RILEY | Design Lead

Jan 2016 - May 2016 | Purdue University, IN

- Chaired a team of 7 to deliver a sailboat to be used at Camp Riley(Indiana) for children with disabilities enhancing their learning experience
- Improved my knowledge of systems and signals and their real-life applications like in working motors

FIRST STREET PEER MENTOR PROGRAMME | Participant

Feb 2016 - May 2016| Purdue University, IN

- Tutored freshmen in Math and Physics courses Calculus I, II, III and classical mechanics
- Assisted them to adjust with the campus life and take them to various events hosted by the Titan Club

ENGINEERING PROJECTS IN COMMUNITY SERVICE, DESIGN MANAGEMENT | Webmaster

Jan 2015 - May 2015 | Purdue University, IN

- Used my skills in HTML and CSS to design the front-end of the website for the Purdue International Programs
- Automated the process of monitoring events and 300+ students for the advisors to ease their workload

HONORS/AWARDS

2017	Recipient	Summer Undergraduate Research Fellowship	Purdue University
2017	Recipient	Eli Shay Electrical Engineering Scholarship	Purdue University
2016	Recipient	Walter V. Jones Memorial Scholarship	Purdue University
2015	Recipient	Charles W. Brown ECE Scholarship	Purdue University