Ruchir **Aggarwal**

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Education

Purdue University
West Lafayette, USA

B.S. in Computer Engineering — *Aug 2014 - May 2018 (Expected)*

- **CGPA**: 3.78/4.0
- **Courses**: Data Structures and Algorithms, Advanced C Programming, Computer Design and Prototyping, Microprocessor Systems and Interfacing, ASIC Design, Intro to Digital System Design, Signals and Systems, Discrete Mathemathics, Probalistics Method

National University of Singapore
Singapore

B.S. in Computer Engineering — *Aug 2017 - December 2017*

- **Study Abroad**: All Pass
- **Courses**: Software Engineering, Computer Architecture

Skills

Programming	Advanced: Python, C, HTML Intermediate: CSS, C++, Assembly, System Verilog Intro: Swift, C#, PHP
Database	MySQL
Software	MATLAB, PyCharm, IntelliJ IDEA, Xamarin, Microsoft Office, XCode, Mentor GRAPHICS Questa Sim, Keil MDK 4, Xilinx Vivado 2015.2
Harware	Digilent Nexys 4 based on Xilinx Artix 7 FPGA, STM32f0 Micro-controller

Research Experience

Summer Undergraduate Research Fellowship
Purdue University

Undergraduate Researcher — *May 2017 – August 2017*

- 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

Professional Experience

Water Resources and Ecohydrologic Engineering Group
Purdue University

Undergraduate Computer Consultant — *Jan 2018 – Present*

- Data management, analysis, and visualization using Python, MATLAB, and R
- File management and improving run time of computer models using Python
- Reporting and in line comments for replicating study

Electronic Devices and Design Laboratory
Purdue University

Undergraduate Teaching Assistant — *Jan 2018 – Present*

- 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.
Gurgaon, India

Software Intern — *May 2016 – August 2016*

- 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 transactions
- Enhanced my knowledge of developing multi-platform applications for smart phones

Presentation

Summer Undergraduate Reasearch Fellowship Symposium

Purdue University

Presenter for Development of a Water Quality Status and Trend Detection Tool* *August 2017*

- 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

Academic Projects

ARM Programming

- Built an ARM-like processor with Digilent Nexys 4 board based on Xilinx Artix 7 FPGA using Xilinx Vivado 2015.2 WebPACK
- Coded processor to work with Data-Processing, Memory and Branch instructions of the ARMv3 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

- Collaborated with 2 students to design an address book app catered to business men
- Reworked the entire UI for a 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 members 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 efficiency of 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

Volunteeer Experience

Engineering Projects in Community Service, Camp Riley

Purdue university

Design Lead *Jan. 2016 - May. 2016*

- 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

Engineering Projects in Community Service, Design Management

Purdue University

Webmaster *Jan. 2015 - May. 2015*

- 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

First Street Peer Mentor Programme

Purdue University

Participant *Feb. 2016 - May 2016*

- 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

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*