

# Raphaelle Lomboy Marcial

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## Work Experience

### Product Development Engineer Intern, *BMW of North America*

Aug. 2017 – Present | Woodcliff Lake, NJ

- Developed VBA programs which decreased time spent on searching for testing data by 90%
- Supported weekly tool releases utilized by the infotainment department that were updated by testing and debugging individual subroutines or adding new functions
- Assisted in shifting department from using Excel to web applications by combining SQL Server queries with VBA macros
- Created userforms for easily running programs

### Aresty Research Assistant, *Rutgers University*

May 2016 – Sept. 2017 | New Brunswick, NJ

- Implemented a surveillance system which involved Python scripts ran on Raspberry Pis connected to solar modules, solar panel charge controllers, and rechargeable batteries to evaluate power consumption in electric vehicle charging stations
- Analyzed data and video feeds to identify when cars were full and when non-electric vehicles were parked at a charging station
- Calculated statistics about cost of charging vehicles, number of cars charging in a time period, and average charge time
- Data and statistics included in proposal to Rutgers Department of Transportation for increasing the amount of stations on campus

## Projects

### Modified RISC Processor, *Embedded Systems*

Oct. – Nov. 2017 | [github.com/rm1096/GRISC](https://github.com/rm1096/GRISC)

- Designed and implemented a 16-bit processor with a modified MIPS instruction set for video and communications on an FPGA
- Created an assembly program ran on the processor to print over a UART and display different colored squares on a VGA display based on user-input characters
- Simulated waveforms to verify instructions were going through correct states
- Developed in Xilinx Vivado and utilized the IP Integrator tool to create top level design

### D Latch Layout, *VLSI Design*

Dec. 2017 | [rm1096.github.io/DLatch.pdf](https://rm1096.github.io/DLatch.pdf)

- Created a D Latch using Cadence Virtuoso through schematic, layout, and extracted views
- Solved netlist errors by using logic probe and referring to output file
- Simulated waveforms of schematic and extracted views to verify that they matched

### Restaurant Automation, *Software Engineering*

Jan. – May 2017 | [github.com/rm1096/Zest-Ware](https://github.com/rm1096/Zest-Ware)

- A 7-member project that involved developing a demonstrable web application to increase efficiency in medium-sized restaurants
- Planned and executed lifecycle steps for developing the complex software product
- Utilized traditional and web programming languages such as Java, MySQL, and PHP
- Learned modular design of software and documented the design using symbolic representations via UML

## Education

### Rutgers University, New Brunswick

May 2018

Cumulative GPA: 3.05

Bachelor of Science in Computer Engineering

Coursework: Embedded Systems, VLSI Design, Computer Architecture, Programming, Methodology, Software Engineering, Digital System Design

## Skills & Languages

VHDL	Verilog
C++	VBA
C	PHP
Assembly	MySQL
Arduino	Raspberry Pi

## Tools

Xilinx Vivado	Cadence Virtuoso
Xilinx SDK	Altera Quartus
MATLAB	PSPICE

## Leadership Experience

### Co-Founder, *Electronics Club*

Jan. 2017 – Present | New Brunswick, NJ

- Instituted a club that allowed beginners to get hands on experience in Arduino and Raspberry Pi
- Taught 20+ students through interactive projects
- Walked through hardware setup and coding implementation
- Assessed groups' progress and troubleshoot

### Monitoring Lead, *Engineers W/O Borders*

Jan. 2015 – Sept. 2017 | New Brunswick, NJ

- Led 8 members in analyzing about 100 survey results involving living costs and satisfaction levels from Guatemalan civilians by using multi bar charts in Excel
- Designed a new survey to be utilized in the next post-monitoring trip to evaluate the organization's progress in Guatemala