



# Using FPGAs for Spectrum Sensing and Modulation Recognition Project

Group members:

Ryan Davis

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# Zhuohuan Li - Basic Information

Hello everyone! My name is Zhuohuan Li and I just graduated from Rutgers University on this May major in Electrical and Computer Engineering and I will pursue my M.S. degree at Rutgers ECE Department.

I am also an international student from China and this is my first time working with WINLAB. Hope I can learn more and have more fun with everyone here during this pandemic time.



# Zhuohuan Li - Technology Background

I have learned the basic knowledge of FPGA from the undergraduate course named Digital System Design taught by professor Predrag Spasojevic.

I have the ability to program with C++/Java/Python and familiar with how the FPGA device work.

For the last few days, I have tried to read the Introduction to FPGA Design with Vivado High-Level Synthesis given on the website and do the review of the coding on FPGA and how the code executed.



# Siddarth “Sid” Mandayam

Major: Computer Science and Mathematics

Year: Rising Junior (Grad 2022)

Relevant Coursework: Data Structures, Computer Architecture, Systems Programming, Theory of Probability, Theory of Statistics

What I’ve Done on Thus Far:

- Familiarizing myself with ORBIT/COSMOS and the testbed features
- Reading up on Overview of FPGA Architecture provided to us on project webpage



# Ryan Davis

Major: Computer Engineering and Computer Science

Year: Junior → Senior (Class of 2021)

So far

- × Overview of FPGAs
- × Overview of Networking Model on FPGA



# Our Project

- × Use machine learning to recognize different wireless devices present in a radio environment
- × Use software defined radios (SDR) to record communication between various devices
  - × Wifi
  - × Bluetooth
  - × Zigbee
- × Use the above as training data to a set of neural networks
- × Optimize training with FPGAs



# Plans for next week

- Keep reading the given reading material
- Doing more research on FPGAs and machine learning
- Practice the testbed procedures
- Write a small program in Go



Questions?

