Anthony Ibarra | Electrical & Computer Engineer

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Professional Profile

Electrical and Computer Engineering graduate with a desire to improve in skills and experience to grow. With a strong focus in Control, Robotics, power electronics, and Embedded Systems. I possess various knowledge in different fields to improve the work environment of a multidisciplinary team.

Core SKILLS

- Soldering
- Testing
- Troubleshooting
- Problem Solving
- Creativity
- Designing
- Planning
- Leadership
- Motivation
- Management

Education & Qualifications

UIC, Chicago IL — M.S Jan 2023 - May 2025

Masters of Science in Electrical & Computer Engineering, ECE

Relevant Coursework:

- Audio signal processing
- Intro to filter Synthesis
- Adaptive Digital Filters
- Electromechanical energy Conversion
- Linear Systems Theory & Design
- Electromagnetic Compatibility
- Advanced Computer Communication
- Convex Optimization
- Mechatronics Embedded Design
- Intro Neural Networks

UIC, Chicago IL — B.S Aug 2017 - May 2022

Bachelors of Science in Computer Engineering, ECE

Relevant Coursework:

- Artificial Intelligence I
- Data Structures
- Foundation of Computing
- Principles of Modern Control
- Principles of Auto Control, Robotics: Algorithm & Control
- Embedded Systems
- Comp organization
- Advanced comp architecture
- Intro VLSI design
- Pattern Recognition I
- Computer Comm Networks I
- Probability and Random Process for engineers

Projects

Jan 2025 - May 2025 Audio & Acoustic Signal Processing

Research Paper(project)

Complete a research paper that is roughly the scope and style but not necessarily the format of a Signal Processing Society conference paper. Develop a new method or solution with concepts from class to be applied to an existing problem.

- Collect information from past and current research articles or papers
- Complete a method of approach for solving the problem
- Show and analyze the results obtain from testing through signal processing techniques

Aug 2024 - Dec 2024 Electromechanical Energy Conversion

Series Brush DC Motor Modeling

From a given Datasheet of a motor replicate the graphs of speed, current, power, and efficiency vs. load torque. Use Ltspice to model the motor Brush DC Motor 14207S007-SP, in an electrical circuit and simulate to obtain the graphs.

- Modeling of both electrical and mechanical side of the motor
- Make all units are SI unit and graphs are formatted and scaled accordingly

Jan 2024 - May 2024 Electromagnetic Compatibility Project

Optimization on Three Coil Long Range, Wireless Power Transfer

Based on the provided research papers attempt to recreate the results from said paper. Using Matlab, and HFSS. Provide a professional typeset report regarding the results with Latex.

- Provide Mathematically simulated plot from Matlab regarding the Three coils as shown within the research paper
- Show simulation and plots with HFSS Ansys simulator, regarding the coil behavior
- Provide an IEEE format report using Latex, in a professionally typeset manner.

Jan 2023 - May 2023 Mechatronics Embedded Design Project

Self Driving Car

Lead a team of 4 to design and develop an RC car to follow a line on a track. The car includes a DC motor for the four wheel drive, Servo for steering, and a Line camera for track detection.

- Lead the team and manage all time constraint task, development and design task, make timely decisions for the team's success
- Develop a motor controller with a FET Driver implemented, a controller from either of (single fet, half bridge,or full H-bridge), and gets controlled via a PWM input signal from the microcontroller
- Develop a Boost Converter DC-DC for the power systems
- Develop and tine a PD controller for the steering, and a P controller for the velocity controller
- Design a circuit through Altium Designer and get it manufactured
- Create a perf board circuit as a backup board for the pcb
- Solder all surface mount and through hole components onto the printed PCB board
- Implement a filter for the line Camera or velocity measured input
- Implement Sensors and Encoders

Jan 2023 - May 2023 Intro to Artificial Neural Networks

Wildfire Classification

Design a neural-network-based wildfire/no wildfire classification, using a programming language (Python, Matlab, C++, etc.), and any framework(Pytorch, TensorFlow, Keras, Caffee, Matlab neural network toolbox, etc.). Dataset containing 10k images provided, the training and testing are split 9:1 respectively.

- Using Python as the programming language, and Pytorch as the framework
- Use an image classification model (Note: specific model referenced in the report)

- Adjust model or method to fit the current needs for dataset and computation constraints

Jan 2022 - May 2022 Robotics: Algorithm/Control

Mobile Robot Control

Program a Raspberry Pi alpha bot to complete tasks within a respective area. Programming language of choice is Python, with the robot containing many actuators and sensors.

- Get the robot to follow a line with the use of an infrared sensor and two motorized wheels
- Travers the robot within an area reaching a destination with AruCo marker used as a manner to get the robot localization
- Use AruCo markers to complete respective tasks for each marker, markers are found with an actuated powered camera

Aug 2021 - May 2022 UIC Senior Design

Automated Watering System

Work in a four-student team to prototype a device that water specified plants by taking moisture levels, outdoor weather conditions, and plant information into account.

- Manage team to make sure all assignments are done on time and completed, and submit weekly assignments based on progress of project development.
- Program Arduino Nano iot 33 to decide whether to water or not water plants based on moisture levels
- Create APP (Kivy a python framework was used) to show information regarding the system, plants and weather
- Program a UDP client-server communication between Arduino and APP

Jan 2022 - May 2022 Pattern Recognition I

Face recognition, Principal Component Analysis (PCA)

Using Python scikit-learn datasets and matplotlib train and test, for face recognition.

- use the dataset and train the classifier through the training phase then run through the test for classification for the face recognition

Volunteer

Aug 2017 - May 2025 Table Tennis Club member

TTC at UIC recreation center

Assist with opening, closing, and setting up equipment for club activities. Help with practice and training for future tournaments or events when possible.

2014 - 2017 Volunteer (volunteered 3 times)

HighSchool Heroes Program

The process of teaching 1st-3rd graders about society through a specified curriculum composed into four sections. Volunteers are placed in a group of 3 to complete said curriculum in a concise time frame for each section.

Additional

Interests:

- Artificial Intelligence
- Machine Learning
- Deep Learning
- Neural Networks
- Programming
- Robotics
- Automation
- Research
- Development
- Design
- Embedded & Control systems
- Power Efficiency
- Cost Efficiency
- Hardware Security

Hardware used:

Equipment:

- Oscilloscope
- Multimeter
- Function Generator
- Waveform Generator
- PowerSupply
- Soldering Tools
- Breadboard
- Microcontrollers
- Keysight N9912A(FieldFox RF analyzer)

MCU:

- Tiva C launchpad TM4C123G
- Arduino Nano 33 IoT
- Raspberry pi (alpha bot)
- Freescale FRDM-KL25Z

Programming Languages:

- Python
- C/C++
- Assembly
- Verilog
- VHDL
- PLC(ladder logic)
- CSS
- Html
- JavaScript
- Rust

Software used:

Programming:

- VS Code
- GitHub
- Git
- Ubuntu(WSL)
- Docker
- Spyder
- Microsoft Word, PowerPoint, Excel

Embedded:

- Code-Composer studio
- Kinetis design studio
- Arduino IDE
- Mars 4_5
- VNC viewer (raspberry Pi)

Circuit design:

- Altium Designer
- Quartus
- Flux
- LTspice

Simulation & Design or Development:

- MATLAB
- Solidworks
- Mathematica
- Design Spark
- Blender
- HFSS Ansys

PLC(self taught):

- RSLogix Micro
- RSLinx Classic
- RSLogix Emulate 500

Database(self taught):

- mySQL
- SQL

Hobbies:

- Repairing (disassembling and reassembling electronic parts / devices)
- Table-Tennis, video games