

# Can Kınık

## Electrical and Electronics Engineering Undergraduate Student

### EDUCATION

#### İhsan Doğramacı Bilkent University 2017-2021

- Fourth Year First Semester EEE Undergraduate
- Merit scholarships of 100%, 40% and 60% for academic success
- CGPA/AGPA: 3.75/4.00 | Standing: High Honor | Ranking: 21/232
- Expected to graduate in June 2021

#### TED Ankara College Private Highschool

- Graduated with certificates from both national and IB programs in 2017.
- 94,07/100      National Degree
- 38/45          International Baccalaureate Degree

### WORK EXPERIENCE

#### Ecin Robotics R&D Summer Internship

I have worked with Ecin Robotics, a sub-brand of Göker Hydraulics, that develops R&D solutions to industrial and electronic requirements. My internship composed of developing a microcontroller that turns a DC motor into a servo/stepper motor through PID feedback mechanism. The final product tunes its PID parameters on its own, eliminating the requirement of manual adjustment when the load or the motor is changed. The interface for controlling the movement can either be through entering a degree similar to a servo motor or sending pulses like a stepper motor.

#### TAI UAV Integration and Testing Department Summer Internship

I have worked within Turkish Aerospace Industries under the Unmanned Aerial Vehicle department's integration and testing branch. I have gone through theoretical training on avionics regarding subjects such as navigation, communication and positioning; conducted hardware tests by carrying out pre-generated tests and monitoring sensor outputs, and lastly wrote my own software in C# to generate automated tests as to ensure that the tester correctly identifies any misfits between requirements and the product.

### ONLINE EDUCATION

- Introduction to System on Chip Design ..... ARM Online Courses
- Embedded Systems Essentials with ARM ..... ARM Online Courses
- Real-Time Bluetooth Networks..... University of Texas at Austin, edX
- Introduction to Linux ..... Linux Foundation, edX
- Version Control with Git.....Atlassian, Coursera
- Introduction to Operating Systems..... Georgia Tech, Udacity
- Algorithms Specialization by Stanford .....Stanford, Coursera
- C Programming Step by Step ..... Udemy
- C++: From Beginner to Expert..... Udemy
- Advanced C++ Programming Training Course ..... Udemy
- QT C++ GUI Tutorial for Beginners..... Udemy

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### SKILLS

- C & C++
- 8051 & ARMv6-M Assembly Instructions
- VHDL
- MATLAB
- Embedded Systems
- Operating Systems
- Real-Time OS
- Algorithm Design
- SoC Design
- C#
- Java
- Linux Shell Scripting
- CAD
- Git
- English (IELTS: 7.625)
- Turkish (Native)
- German (Intermediate)

### PLATFORMS

- Keil µVision
- Mathworks&Simulink
- Vivado
- Android Studio
- QT
- LTSpice
- Linux
- ARM Cortex-M0&4
- STM 32
- Arduino
- Raspberry Pi
- BASYS-3

### RELEVANT COURSES

- Microprocessors
- Digital Design
- Computer Networks
- Telecommunications
- Algorithms and Programming 1 & 2
- Signals and Systems
- Electronic Circuit Design
- Feedback Control Systems
- Nonlinear Systems

## PROJECTS

### DC to Servo/Stepper Motor Converting Microcontroller on STM32F469

A controller for moving DC motors with an interface and performance similar to servo/stepper motors. PID feedback is used where the input is encoder-measured revolution and output is PWM duty cycle sent to the motor driver. The initial estimate of PID parameters are found using Ziegler-Nichols 2nd Method which are further fine-tuned through repeated testing. The controller doesn't need manual intervention for different motors or loads.

### Oscilloscope Implementation on STM32F469

An application for the STM32F469 microcontroller which tracks the input analog voltage of up to 3.3V in real-time and displaying the magnitude on the LCD screen. The frequency of refreshing and printing on the screen can be adjusted using a potentiometer, and the time dividends at the bottom of the screen can be used to identify intervals from 10s to 100 $\mu$ s. The dividend measure is adjusted in real-time and a button is used to start or stop the system.

### Two-Dimensional Radar Mapping with FRDM Microcontroller & Arduino

A device composed of FRDM microcontroller, Arduino Uno, proximity sensor, high resolution LCD, and servo motor that is capable of periodically mapping its surroundings in a bird-view radar fashion. The servo and proximity sensor are controlled by the Arduino and the samples are sent through a serial link to the microcontroller, which processes the data to generate an image on the LCD screen. C/C++, Mbed, interrupts, and UART serial protocols were covered.

### Contactless AC/DC Clamp Ammeter

A device composed of a hall effect sensor embedded in a toroidal metal core, Arduino Uno, LCD, and additional circuitry that displays characteristics of current passing through a wire without contact. The system is a clamp that can be placed around a wire and adjusts itself for both AC and DC signals with up to 1A, 150Hz at a precision of around 2.2%. Additionally, OPAMPs are used to enhance the signal and filter white noise to obtain better samples.

### Fitness Tracker BSP and RTOS

Within the scope of an online course, I have used an ARM Cortex-M4: MSP-432 and worked on a given BSP to implement RTOS functionality on a fitness tracker. C and ARM thumb instruction set were used within the process and concepts such as interrupt handling, multi-threaded operations, and semaphores were covered.

### Android Application for In-Campus Navigation

A mobile in-campus navigation application that tracks movement through GPS, provides additional information about the establishments in the campus in real time and allows for dataflow through Firebase and Dagger databases.

### FPGA Guitar Hero Game

Implementation of the "Guitar Hero" game on an FPGA board (BASYS-3) using VHDL on the Vivado platform. Random number generation, GUI, real-time signal response and sound synthesizing concepts were utilized.

### Small Distance Radio Transceiver

A system which has been built from scratch within the scope of Analog Electronics course that uses antennas, microphones, frequency channels and signal generation for receiving and transmitting sound within 10 meters.

### Pi-Hole Ad Blocking Network Setup

Setting up a pi-hole program on Raspberry Pi 1b+ so that configuring devices to the appropriate IP and DNS settings in the network prevents blacklisted sites to forward their DNS addresses. A toy project recreation to gain insight into SSH control over Raspberry Pi and gaining experience with the command prompt on the platform.

## RELEVANT LINKS

<https://github.com/cankinik> | <https://www.youtube.com/channel/UCop850rUr8pk-OeFIdCuENg/videos>