Ugurcan Cakal

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EDUCATION

METU
MS in Electrical and Electronics Engineering
Grad. Jun 2021 | Ankara, Turkey
Cum. GPA: 3.57 / 4.0

METU
BS in Electrical and Electronics Engineering
Grad. Jun 2019 | Ankara, Turkey
Cum. GPA: 3.28 / 4.0

SKILLS

PROGRAMMING
Over 50000 lines:
C • C++ • Python • CUDA
Over 5000 lines:
Java • Matlab • SQL
Familiar:
R • Swift 3.0 • C-LISP • Bash

LOW LEVEL & HDL
Assembly • Verilog • System Verilog

FRAMEWORKS
PyTorch • TensorFlow • QT

HARDWARE
ARM Cortex-M4 • Altera Cyclone IV
Raspberry Pi • Arduino
NVIDIA GPUs

COMMUNICATION
IEEE 802.11x • Bluetooth 4.0
SPI • UART • I2C

EDA TOOLS
Altera Quartus II • ModelSim

OPERATING SYSTEMS
Linux • Windows • MacOS

MISCELLANEOUS
LaTeX • Git • Bash • SSH
OpenCV • Wireshark

LANGUAGE
Native: Turkish
Advanced: English

OVERVIEW

Graduate electrical and electronics engineer completing the second year of a master's degree. Passionate about **neuromorphic computing** and **embedded AI**.

WORK EXPERIENCE

ATAR LABS | Software Development Intern
Aug 2018 – Sep 2018 | Ankara, Turkey

- Developed a python application that detects port scanning activity using **Wireshark** for a bigger project aiming to foresee possible cyber-attacks using machine learning.

ARCELIK | Research and Development Intern
Jul 2017 – Sep 2017 | Ankara, Turkey

- Designed and partially developed an iOS application using Swift 3.0 that controls an air conditioner using **GPS** location information to track the phone and use **Bluetooth 4.0** to connect to the smart household appliance.

RESEARCH

MASTER THESIS | Neuromorphic Computing
Feb 2020 - Present | METU EE, Ankara, Turkey

- Carrying out a research on computational neural **cell assembly** structures and their collective decision processes.
- Building recurrent spiking neural network (**SNN**) architectures using **PyTorch** to classify human gestures recorded by a neuromorphic event-based camera.

SELECTED PROJECTS

CHASE & TAG ROBOT | Capstone Design Project
Oct 2018 – Jun 2019 | METU EE, Ankara, Turkey

- An autonomous robot that can chase another robot around a closed elliptical path and tag via a proprietary handshaking protocol over Wi-Fi.
- Implemented an **ad-hoc network** which is extending the existing Wi-Fi network of the opponent robot .
- Designed all unit, integration, and performance **tests**; performed related experiments and did the required analyzes.
- Wrote conceptual design, critical design review, final implementation **reports** and a detailed user manual.
- Worked as a team with other engineers on design, development and assembly of the robot.

CLASSIFICATION FOR DETECTION OF FOD | Machine Learning
Nov 2018 – Jan 2019 | METU EE, Ankara, Turkey

- Built a convolutional neural network having 94% test accuracy using **TensorFlow**, which can classify foreign object debris on the airport pavements as bird, metal, and plastic; supported by ArgosAI company.