BUĞRA COŞKUN

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SUMMARY

As a maker my hobbies and work usually intersect and feed into each other. My passion is to create things of unfamiliar and seemingly complicated nature. The process of working out problems and learning things while producing something of value is a driving force that helped me greatly in becoming a versatile researcher and engineer. My strongest soft skill is therefore adaptability and independence when dealing with changing workloads.

SKILLS

General: Applied Mathematics, Algorithm Design, Control Engineering, Scientific Computing, Software Engineering, Embedded Programming,

Tech. Languages: C, Python, Assembly, Octave/Matlab, Bash, LaTEX

Natural Languages: English (TOEFL: 108), Turkish (Native), Japanese (A2)

EXPERIENCE

Oct/2021 Present

R&D Control Systems Design Engineer — **Profen Communication Technologies & Services, Inc.**

- Designed the control algorithm, the controller PCB and embedded program for Airplane SOTM pedestal (concept project).
- Wrote the CTL: Coordinate transformations library for aerial tracking pedestals with Beckhoff PLCs.
- Wrote a paper and accompanying C program for unideal geometry inverse kinematics of X-Y pedestals.
- Working on V-Band travelling wave tube research project.
- Gave a lecture (total: 8 hours) on GNU/Linux systems.

`Applied Mathematics / Control Systems`

Jul/2021 Oct/2021

R&D Control Engineering Intern — **Profen Communication Technologies & Services, Inc.**

- Worked in X-Band MIYEG project for visualizing diagnostics data.
- Wrote the WizTLE satellite tracking software.
- Analyzed the data and produced corrected function for faulty inclinometer.

`Applied Mathematics / Satellite Communications`

EDUCATION

2018 - 2023

BE, Mechatronics Engineering. Kocaeli University — **School**

GPA: 3.05

RESEARCH

Nov/2023

Kinematics of X-Y Pedestals with Joint and Pointing Misalignment — **Preprint**

https://doi.org/10.31224/3371

PROFESSIONAL PROJECTS

Profen Software

WizTLE: Minimal Multi-Satellite Tracking Software for XY and AZEL Antenna Mounts — **proprietary**

Software for tracking the positions of satellites, written in Python.

Open Source Software

Xyink: X-Y Inverse Kinematics Solver — **Github**

Program for calculatings the inverse kinematics angles of X-Y antenna pedestals. Written in C for Linux computers as a support for my paper on the related subject.

Profen TwinCAT Library

CTL: Coordinate Transformations Library for Tracking Aerial Objects — **proprietary**

Mathematical function library for general satcom tracking applications written in Structured Text for Beckhoff PLCs.

Profen TEYDEB Project

Hava SOTM: Airplane Antenna Pedestal

I'm working on this project as a control systems designer. I designed the control algorithm, the controller electronics & PCB as well as the electromechanical assembly. I did extensive MIL and SIL tests. PIL tests are ongoing.

Profen TEYDEB Project

V-Band Travelling Wave Tube Amplifier

I'm working on this project as a control and electronics support. I help design the high voltage circuitry, do analysis on vibration data of pedestal systems, design and operate the robotic test equipment for magnetic field measurements and the plans for the diagnostics logging system.

COURSES & CERTIFICATES

Nov/2023 — **Game Theory** — **Stanford University**
Ongoing.

Dec/2023 — **Introduction to Quantum Information** — **Korea Advanced Institute of Science and Technology**
Ongoing.

Aug/2020 — **The Introduction to Quantum Computing** — **Saint Petersburg State University**
Link to the course certificate.

Feb/2021 — **Electrodynamics: An Introduction** — **Korea Advanced Institute of Science and Technology**
Link to the course certificate.

Mar/2020 — **Complete Tensorflow** — **Udemy**
Link to the course certificate.

Apr/2020 — **Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization** — **DeepLearning.AI**
Link to the course certificate.

Sep/2018 — **Neural Networks and Deep Learning** — **DeepLearning.AI**
Link to the course certificate.

Jun/2016 — **Python Data Structures** — **University of Michigan**
Link to the certificate.

PERSONAL PROJECTS

Python, Electronics

Tamabunni: Tamagochi Inspired Handheld — **Github**

An electronic handheld I made with Raspberry Pi Pico and Nokia 5110 LCD screen.
The link to the Youtube video

Linux, GIT, IT

Personal Linux Server — **bcskn.xyz**

I'm renting a VPS to serve as my general use server. I'm running Git, Voice Chat, Proxy and Web servers inside it. I also use it as a midway connection point for my IBM X3650 M3 server at home.

C++, Electronics, Applied Science

Handheld Heat Flux Meter — **bcskn.xyz/heatflux**

A meter that measures heat flux using a simple TEMs module. The measurement is done using calculations based on the TEMs voltage output, it's seebeck coefficient and it's thermal resistance. The linear relationship between flux and TEMs output is calculated using fourier's law in one dimension and the relation between thermal conductivity and thermal resistance. The resolution of the meter is $295.57 mW/m^2$ with maximum times 100 analog signal scaling.