Furkan **Aldemir**

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Experience

Team Lead
Novit.AI

Oct 2023 - Present
Ankara, TR

- Lead a tech team of seven engineers.
- Operated accumulation and distribution of know-how in the form of clear documentation.
- Cloud / DevOps: (FastAPI, Docker, GitHub Actions, AWS EC2 & ECR & S3 & Lambda & DynamoDB & Lightsail)
  - Oversaw development of a telemetry server for deployed devices.
  - Improved environment setup speeds with containerization via Docker and distribution via AWS ECR.
  - Reduced runtime errors and improved consistency across projects by introducing checks on code changes with GitHub Actions.
  - Owned responsibility for reverse SSH and VPN servers for deployed devices and CVAT servers for annotation purposes.

Machine Learning Engineer
Novit.AI

Mar 2022 - Oct 2023
Ankara, TR

- Renovated the company website and made it easier to create and modify its content. (React / Vue)
- Ground Observation Unit: (NVIDIA Jetson, TensorRT, GPU, Docker, TAK, Edge AI)
  - Refactored and maintained a legacy embedded AI camera system that is deployed on Jetsons with TensorRT object detection / tracking models.
  - Improved setup automation to reduce development time and frictions.
  - Investigated, figured out, and documented how to use the Team Awareness Kit (TAK) interface. Created modules that allow communication with TAK clients via images, videos, and chat.
  - Documented the usage of routers, GPS modules, USB and IP cameras, AIS transmitters/receivers with NVIDIA Jetson devices.
- ML / Data Engineering: (PyTorch, Web scraping, GitHub Actions, Django)
  - Maintained and debugged a legacy data extraction pipeline that uses an undocumented third party API.
  - Constructed projects to convert image segmentation results into more usable formats.
  - Scraped and generated datasets with clean structures to aid training object detection models.
  - Trained object detection models and prepared pipelines that compare the models' results against the state-of-the-art.
  - Created and maintained parsers that convert between different annotation types for segmentation masks/polygons.

Research Assistant
METU Heart Research Laboratory

Oct 2020 - Mar 2022
Ankara, TR

- Worked with my thesis advisor on TUBITAK funded projects: (MATLAB, Digital Signal Processing, Bayesian MAP Estimation)
  - Application of Bayesian Estimation Methods to Electrocardiographic Imaging: Prior Model Selection and Reduction of Noise Effects
  - Performance Evaluation of Noninvasive Electrocardiographic Imaging for the Localization of Premature Ventricular Contractions from Clinical Data
- Inspected and reduced the effect of errors in heart and torso geometric models on the performance of the inverse problem of electrocardiography.

Machine Learning Engineer Intern
Darkblue Telecommunications

Summer 2019
Ankara, TR

- Trained a road detecting model with CNNs and tested it on videos from a drone.

Electronics Engineer Intern
AirCar Corp

Summer 2019
Istanbul, TR

- Ensured the safety of electronic components and researched battery management systems.

Electrical Engineer Intern
ELTEMTEK

Summer 2018
Ankara, TR

- Designed and modeled new electric distribution networks for several districts in Turkey.

Education

Master of Science in Electrical - Electronics Engineering
Middle East Technical University

2020 - 2023
Ankara, TR

- Thesis: Geometric model error reduction in inverse problem of electrocardiography
- Course: CENG501 Deep Learning
- CGPA: 3.11/4.00

Bachelors of Science in Electrical - Electronics Engineering
Middle East Technical University

2016 - 2020
Ankara, TR

- CGPA: 3.53/4.00

Projects

Korsan Jaime Bot *2019 - Present*

- A Telegram bot that keeps track of debts between a group of people. The code is open sourced and shared on my GitHub account. Initially, I used to run my instance on the cloud. After a few years, I made the project footprint smaller, added containerization, and started hosting my instance on a Raspberry PI Zero at home. The bot is named after two lovely cats who were once housemates of mine.

School Projects *2018 - 2020*

METU EEE

- **Autonomous Cat Feeding System:** An integrated system of cameras, object detection and recognition models, and a web interface.
- **Mouse Tracker:** A Kalman Filter software, developed with C and LabVIEW and running on an FPGA, that tracks and predicts the movement of the mouse.
- **Ball & Beam:** A PID controller designed to control the position of a ball on a beam. (Arduino)
- **Fake Quidditch:** An FPGA game that is coded with Verilog, displayed with the VGA interface, and controlled with analog buttons.
- **Optical Wireless Communication System, Photophone:** An analog system that takes an input audio signal, transmits that through air via light, to be played out at the other end by a speaker.
- **Wireless Fire Detection System:** An analog system in which various LEDs indicate the position of the highest temperature among spaced out sensors.
- **Single-Axis Solar Tracking System:** An analog system in which a servo motor rotates a panel to where it faces the brightest light.

Publications

Aldemir, F., & Dogrusoz, Y. S. (2021). Compensation of Model Errors in Electrocardiographic Imaging Using Bayesian Estimation. *2021 Computing in Cardiology (Cinc)*, *48*, 1–4. https://ieeexplore.ieee.org/abstract/document/9662933

Other

Languages	Turkishs (Native) | English (Advanced) | German (Beginner) | Spanish (Beginner)
Interests	Songwriting | Reading | Playing soccer