

# Dogan Parlak

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## Education

**University of Zurich, Zurich, Switzerland**

Master of Science

Sep. 2020 – Aug. 2023 (expected)

Department of Computer Science

Major: Data Science

Minor: Banking and Finance

GPA: 5.11/6.0 Major GPA: 5.30/6.0

**Bilkent University, Ankara, Turkey**

Department of Engineering - Electrical and Electronics Engineering BSc.

Sep. 2016 – Jun. 2020

GPA: 3.03/4.0

**TED Ankara College, Ankara, Turkey**

GPA: 77.63/100.0

Sep. 2012 – Jun. 2016

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## Research Experience

**ETH Zurich - Social Networks Lab, Zurich, Switzerland**

Research Assistant

Jun. 2022 – Ongoing.

Advisor: Prof. Dr. Ulrik Brandes

- Working with spatio-temporal tracking data obtained from UEFA to generate automatic formation detection algorithms.
  - Working with the same dataset to cluster passing patterns of players and teams by building spatial networks.
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## Industry Experience

**Kardiner Medical Systems, Ankara, Turkey**

Embedded Systems Engineer Intern

Jun. 2019 – Jul. 2019

- Utilized NUCLEOF412ZG board with STM32 Cube IDE to communicate via Serial Peripheral Interface protocol.
- STEVAL-MKI178V2 chip is utilized to obtain gyroscope and accelerometer data which communicates with the NUCLEOF412ZG board via SPI protocol.
- Hardware and software designs are done individually.

**FNSS Defence Systems, Ankara, Turkey**

Embedded Systems Engineer Intern

Jun. 2018 – Jul. 2018

- Utilized NUCLEOL476RG board with STM32 Cube IDE to communicate via Controller Area Network protocol.
  - Hardware and software designs are done individually.
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## Significant Academic Projects

**Italy v Spain Match Analysis Euro2020, ETH Zurich**

Soccer Analytics

Fall 2022

Supervisor: Prof. Dr. Ulrik Brandes

- EURO 2020 semi-final match Italy against Spain is analyzed.
- Analysis techniques regarding players' movement, passing, shooting, in-game and end-of-game match probabilities, set-pieces, player valuations, ratings are examined.
- A match report based on the event data obtained from Statsbomb, and the tracking data obtained by the courtesy of UEFA is generated.

**UniFi: A Unified Framework for Portfolio Management, University of Zurich**

Master's Research Project

Spring 2022

Supervisor: Prof. Dr. Manuel Günther

- A framework which provides its users the opportunity to compare different portfolio allocation methodologies.
- Main sections are financial environment layer, model layer and evaluation layer.
- In financial environment layer, users can either fetch or import their own data and apply feature engineering.
- In model layer, users can either use a conventional model or a reinforcement learning model as the portfolio allocation algorithm.
- In evaluation layer, users are able to apply back-testing and view the performance of the chosen algorithm with preferred performance metrics.

**Cryptocurrency Price Direction Prediction, University of Zurich**

Finance and Machine Learning

Fall 2021

Supervisor: Dr. Mario Sikic

- A binary classification task which predicts the direction of "close prices" of the cryptocurrencies: ADA, BTC, DOGE, ETH and LTC utilizing high level frequency (minute level) data.
- Feature engineering is done to handcraft the most prevalent technical features used in technical analysis. Model-dependent and model-agnostic feature selection methods are utilized to select the most informative and relevant features.

- Decision tree model is built as a baseline and aimed to improve the prediction accuracy in varying time horizons using support vector machine, logistic regression, artificial neural network, recurrent neural network and random forest models.

**Alzheimer Phase Detection**, *University of Zurich*  
*Applied Business Modelling and Analytics* Spring 2021  
 Supervisor: *Dr. Robert Leonard Earle*

- A multilabel classification task that utilizes fMRI images of distinct people who faced Alzheimer and predict the phase of their disease.
- Non-Demented, Mild Demented, Moderate Demented and Very Mild Demented are the 4 stages of the disease.
- A Convolutional Neural Network is built to train, validate and test the objective.

**BeeSMART**, *Bilkent University*  
*Bachelors Graduation Project* Spring 2020  
 Supervisor: *Prof. Dr. Ezhan Karasan*

- The project have embedded components consisting of GSM, GPS, Microphone, Weight, and Temperature sensors to monitor the smart hive in addition to Edge Learning.
- Main aim is to predict the internal conditions of the hive using bee sounds, while simultaneously reporting the results to a cloud server to establish the IoT communication over MQTT with Android and Web applications for the clients.

**Financial Risk Optimizing for Lending Club Lenders**, *Bilkent University*  
*Statistical Learning and Data Analytics* Fall 2019  
 Supervisor: *Prof. Dr. Cem Tekin*

- A binary classification task which predicts whether the borrowers are going to fully pay their debt based on distinct loans considering the features of the borrowers.
- Dataset contains 1.300.000 loans with 75 features such as current, late, fully paid and latest payment information.
- Logistic Regression, Multi-Layer Perceptron, Random Forest and Support Vector Machine models are implemented individually.

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### Skills

**Software:** Python, SQL, R, MATLAB, C/C++, Java, VHDL  
**Technologies:** SoccerAction, mplsoccer, PyTorch, TensorFlow, Keras  
**Tools:** VSCode, Jupyter Notebook, Git, XCode, Arduino

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### Languages

English	Level: Advanced
German	Level: A1
Turkish	Level: Native

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### Examinations

TOEFL iBT	Grade: 97/120
GRE General Test	Quantitative: Grade 168/170

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### Extracurricular

- Churchill House School of English Language summer school certificate
- Loyola Marymount Universtiy English language summer school certificate
- Former licenced kickboxer
- Former licenced chess player