

Dogan Parlak

Website: doganparlak.github.io

✉ dgnprlk@gmail.com ✉ dogan.parlak@uzh.ch

☎ +90 531 341 46 61 ☎ +41 76 288 05 50

Education

University of Zurich, Zurich, Switzerland

M.Sc. in Computer Science

Sep. 2020 – Present.

Major: Data Science

Minor: Banking and Finance

GPA: 5.2/6.0

Major GPA: 5.3/6.0

Bilkent University, Ankara, Turkey

B.Sc. in Electrical and Electronics Engineering

Sep. 2016 – Jun. 2020

GPA: 3.03/4.0

TED Ankara College, Ankara, Turkey

High-School

Sep. 2012 – Jun. 2016

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 and role assignment algorithms.
 - Working with the same dataset to cluster passing patterns of players and teams by building spatial networks.
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Teaching Experience

ETH Zurich - Soccer Analytics, Zurich, Switzerland

Teaching Assistant

Spring 2023

Lecturer: Prof. Dr. Ulrik Brandes

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

An Open-Source Implementation of FIFA's Enhanced Football Intelligence, University of Zurich, ETH Zurich

Master's Thesis

Spring 2023

Supervisor: Prof. Dr. Claudio J. Tessone, Co-Supervisor: Prof. Dr. Ulrik Brandes

- Are the concepts in the Enhanced Football Intelligence document sufficiently detailed to allow for reproduction of FIFA's match reports?
- The goal of the thesis is an open-source implementation of the concepts in the Enhanced Football Intelligence document, and its validation on FIFA World Cup 2022 data. Where necessary to resolve ambiguities, alternatives can be tested, and potential improvements can be included.

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

Master's Research Project

Spring 2022

Supervisor: Prof. Dr. Manuel Günther

- A framework to compare different portfolio allocation methodologies.
- Consists of 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(Support Vector Regression, Random Forest, Decision Tree, Linear Regression, Huber Regression) or a reinforcement learning model (A2C, TD3, PPO, DDPG) as the portfolio allocation methodology.
- In evaluation layer, users are able to apply back-testing and view the performance of the chosen methodology with preferred performance metrics.

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.

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 with Alzheimer and predict the phase of their disease.
- Non-Demented, Mild Demented, Moderate Demented and Very Mild Demented are the four 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 and tested.

Skills

Software: Python, R, MATLAB, C, C++, Java, SQL, VHDL

Technologies: NumPy, Pandas, Scikit-Learn, SoccerAction, Mplsoccer, PyTorch, TensorFlow, Keras

Tools: VSCode, Jupyter Notebook, Git, XCode, Arduino

Languages

English

Level: Advanced

German

Level: A1

Turkish

Level: Native

Examinations

TOEFL iBT

Grade: 97/120

GRE General Test

Quantitative: Grade 168/170

Extracurricular

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