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: 5.31/6.0

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

Industry Experience

Kardinero Medical Systems, *Ankara, Turkey*
Embedded Systems Engineer Intern *Jun. 2019 – Jul. 2019*

- Utilized NUCLE0F412ZG 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 NUCLE0F412ZG 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.

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.

Skills

Software: Python, SQL, R, MATLAB, C/C++, Java, VHDL
Technologies: 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 Universtiy English language summer school certificate
- Former licenced kickboxer
- Former licenced chess player