Dogan Parlak

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Education

University of Zurich, *Zurich, Switzerland*
M.Sc. in Computer Science *Sep. 2020 – Ongoing.*
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.

Teaching Experience

ETH Zurich - Soccer Analytics, *Zurich, Switzerland*
Teaching Assistant *Spring 2023*
Lecturer: *Prof. Dr. Ulrik Brandes*

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.
- Employed STEVAL-MKI178V2 chip to obtain gyroscope and accelerometer data, which communicates with the NUCLE0F412ZG board via SPI protocol.
- Completed hardware and software designs individually.

FNSS Defence Systems, *Ankara, Turkey*
Embedded Systems Engineer Intern *Jun. 2018 – Jul. 2018*

- Used NUCLEOL476RG board with STM32 Cube IDE to communicate via Controller Area Network protocol.
- Completed hardware and software designs individually.

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 to provide an open-source implementation of the concepts in the Enhanced Football Intelligence document and validate it using 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

- Developed a framework to compare different portfolio allocation methodologies.
- Consisted of a financial environment layer, model layer, and evaluation layer.
- In the financial environment layer, users can fetch or import their own data and apply feature engineering.
- In the model layer, users can use either 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 the 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

- Analyzed the EURO 2020 semi-final match between Italy and Spain.
- Examined analysis techniques regarding players' movement, passing, shooting, in-game and end-of-game match probabilities, set-pieces, player valuations, and ratings.
- Generated a match report based on the event data obtained from Statsbomb and the tracking data obtained courtesy of UEFA.

Cryptocurrency Price Direction Prediction, *University of Zurich*
Finance and Machine Learning *Fall 2021*
Supervisor: Dr. Mario Sikic

- Conducted a binary classification task to predict the direction of close prices of cryptocurrencies (ADA, BTC, DOGE, ETH, and LTC) utilizing high-level frequency (minute level) data.
- Performed feature engineering to handcraft the most prevalent technical features used in technical analysis. Utilized model-dependent and model-agnostic feature selection methods to select the most informative and relevant features.
- Built a decision tree model 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

- Developed a multilabel classification task that utilized fMRI images of distinct people with Alzheimer's disease to predict the phase of their disease.
- The four stages of the disease were Non-Demented, Mild Demented, Moderate Demented, and Very Mild Demented.
- Built a Convolutional Neural Network to train, validate, and test the objective.

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

- Developed a project with embedded components consisting of GSM, GPS, Microphone, Weight, and Temperature sensors to monitor the smart hive in addition to Edge Learning.
- The main aim was to predict the internal conditions of the hive using bee sounds while simultaneously reporting the results to a cloud server to establish 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

- Conducted a binary classification task to predict whether borrowers would fully pay their debt based on distinct loans considering the features of the borrowers.
- The dataset contained 1,300,000 loans with 75 features such as current, late, fully paid, and latest payment information.
- Implemented and tested Logistic Regression, Multi-Layer Perceptron, Random Forest, and Support Vector Machine models.

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 Universtiy English language summer school certificate
- Former licensed kickboxer
- Former licensed chess player