Ozancan Ozdemir

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EDUCATION

- **Doctor of Philosophy** — November 2023-
  Univeristy of Groningen

- **Master of Science in Statistics, Valedictorian, GPA: 4.00** — September 2017- August 2020
  Middle East Technical University
  Thesis Title: Performance Comparison of Machine Learning Methods and Traditional Time Series Methods for forecasting,Under the supervision of Yozgatlıgil C.

- **Preparing for Teaching Assistant and Master Study Exams** — July 2017-August 2017
  Ankara

- **Bachelor of Science in Statistics, Valedictorian, GPA: 3.74** — September 2012- June 2017
  Middle East Technical University

EXPERIENCE

- **PhD Candidate** — November 2023-Present
  University of Groningen .

- **Weekly Columnist** — June 2024-Present
  T24-Online News Paper .
  I write articles about artificial intelligence applications and socioeconomic statistics.

- **Machine Learning Researcher** — October 2021-October 2023
  TED University — *Turkish Scientific and Technological Research Council, PhD fellowship*
  I have contributed to the project, supported by Turkish Scientific and Technological research Council, focusing on the development of a Hand Robotic Mirror Therapy System Based on Motor Learning. My purpose is to generate a subject-specific machine learning or deep learning models, where EEG signals are inputs, using sckitlearn, Pytorch and Keras packages. In doing so, I have managed, manipulated and visualize EEG data using MATLAB.

- **Data Scientist** — August 2022-October 2023
  Arizona State University and Ozyegin University Collaboration
  In the scientific project collaborated by ASU and OzU, I have converted audio call recordings to text data through Sonix. Then, I managed and manipulated the data in R for NLP models. Moreover, I have conducted descriptive analysis for text data using quanteda package in R, and I have applied a couple of classification machine learning models for sentiment analysis.

- **Co-founder** — April 2020-August 2023
  VeriPie
  Founded one of the first data journal that shares a statistical article about topical issues in Turkey.

- **Research and Teaching Assistant** — November 2017-October 2023
  Middle East Technical University — *Department of Statistics*
  I have been teaching several lectures including Machine Learning, Applied Time Series, Data Visualization, Advanced Statistical Data Analysis, Statistical Computing, Stochastic Processes, Mathematical Statistics, Probability, and Multivariate Statistical Analysis. In addition to them, I have published and presented a couple of articles at conferences and scientific journals.

- **Data Analyst Consultant** — December 2021- January 2022
  TNA Energy
  I provided a consultancy for developing an accurate real time wind power forecast model by constructing several novel deep learning architecture including GRU, LSTM with attention and CNN+LSTM architecture. While doing this, I also conducted the descriptive analysis and data manipulation using Pandas and Numpy packages.

- **Student Assistant** — October 2016-May 2017
  Middle East Technical University — *Department of Statistics*
  I evaluated some homework and quizzes for some bachelor courses in the Department of Statistics at METU.

- **Summer Intern** — July 2016 - a month
  Central Bank of Turkey — *Department of Banking and Financial Institution*

- **Summer Intern** — June 2016 - a month
  Ministry of Treasury and Finance — *Department of Insurance and Actuarial Science*

Skills

R, R Shiny, Python, Pytorch, scikit-learn,TensorFlow, SQL, SPSS, MATLAB, SAS, Minitab, Tableau, Flourish, HTML, Latex, Adobe Photoshop, Time Series Analysis and Forecasting, Stock Market Analysis, Statistical Modelling, Machine Learning Applications, Deep Learning Applications, COVID-19 Data Analysis, Biostatistics, Data Visualization, Developing R and Python Applications, Data-Based Policy Development.

Projects

- **Effect of the Parent and Youth Helpline on Parental Stress During Covid**: The goal of this study is to determine whether callers' speech patterns changed between the beginning and finish of calls using audio recordings of calls that Parents Anonymous recorded. Changes in speech patterns will reveal whether anxious behaviors subsided during the course of the calls. Tech: NLP, R, Python (October'23)

- **Development of a Hand Robotic Mirror Therapy System Based on Motor Learning**: In this project, we propose a robotic hand rehabilitation system for hemiplegia patients based on fine grip movement. Tech: Python, Pytorch (October'23)

- **Medium Term Wind Power Forecasting Using Deep Learning**: In this study, medium term wind power predictions are performed by using Gated Recurrent Unit(GRU), Long Short Term Memory with attention, a hybrid Convolutional Neural Network and Long Short Term Memory architecture and Autoregressive Convolutional Recurrent Neural Network on the real life hourly production data set of a power plant operator to outperform the company's model. company. Tech: Python, Pytorch (January'22)

- **House Price Prediction Using Machine Learning: A Case in Iowa**: In this project, we aim to developan accurate regression model using tree-based algorithms andexplain the type of information which has an impact on the houseprice. Tech: Python, sklearn (January'22)

- **Evaluation of Reading Skills in the Context of Gender: An Analysis with PISA 2018 Data**: Examining the reading proficiency of girls and boys in Turkey by analyzing data from the International Student Program (PISA) 2018. Tech: SPSS, R Studio. (July '21)

- **Visualization of Turkey Provinces**: Contribution a project in Ozyegin University by drawing Turkey Map in R Tech: R Studio (April'21)

Publications

- **Paper in refereed journals**: Özdemir, O., & Yozgatlıgil, C. (2024). How to teach Data Visualisation to Fresh Statisticians: A Case Study in Turkey. Journal of Data Applications, 3, 1-xx. https://doi.org/10.26650/JODA.1472118

- **Paper in refereed journals**: Türkeş, M., Özdemir, O., & Yozgatlıgil, C. (2024). Forecasting drought phenomena using a statistical and Machine Learning-Based analysis for the Central Anatolia Region, Turkey. International Journal of Climatology. https://doi.org/10.1002/joc.8742

- **Paper in refereed journals**: Ozdemir, O.(2024). turkeyelections: The Most Comprehensive Initial R Package Developed on Election Results in Turkey. JSAS, no. 9, pp. 67–76. https://doi.org/10.52693/jsas.1456233.

- **Paper in refereed journals**: Ozdemir, O., Yozgatligil, C. (2023). Forecasting performance of machine learning, time series, and hybrid methods for low- and high-frequency time series. Statistica Neerlandica, 1–34.https://doi.org/10.1111/stan.12326.

- **Paper in refereed journals**: Mustafa Cavus, Olgun Aydin, Ozan Evkaya, Derya Tufan, Filiz Karadag, Ozancan Ozdemir, Deniz Bezer, Ugur Dar. The Conference Report of Why R? Turkey 2022: The First R Conference with Call For Papers in Turkey. The R Journal, 14(2):340-346, June 2022.

- **Paper in refereed journals**: Mustafa Cavus, Olgun Aydin, Ozan Evkaya, Ozancan Ozdemir, Deniz Bezer, Ugur Dar. Conference Report of Why R? Turkey 2021. The R Journal, 13(1):648-653, June 2021.

- **Paper in refereed journals**: Orak, N.H., Ozdemir, O., The impacts of COVID-19 lockdown on PM10 and SO2 concentrations and association with human mobility across Turkey, Environmental Research,https://doi.org/10.1016/j.envres.2021.111018.

- **Abstract in conference proceedings**: O. Ozdemir*, M. Biehl, N. Petkov; University of Groningen, NL. (2025) "A Comprehensive Review of Fundamental Indicators and Machine Learning Techniques for Stock Market Forecasting" Applications of Intelligent Systems (APPIS 2025), Las Palmas, Spain.

- **Abstract in conference proceedings**: O. Ozdemir*, M. Biehl, N. Petkov; University of Groningen, NL. (2024) "Integrating Fundamental Analysis in Machine Learning for Stock Price Prediction: The First Insights from a Comprehensive Survey" AMALEA-Advances and Applications of Machine Learning and AI, Cetraro, Italy.

- **Abstract in conference proceedings**: Ozdemir O., Yozgatlıgil C. (2019) "Performance Comparison of Machine Learning Methodsand Time Series Methods for Forecasting" 5th International Researchers, Statisticians and Young Statisticians Congress, Aydin, Turkey, 18 - 20 October 2019, page.1.

- **Abstract in conference proceedings**: Ozdemir O. , Yozgatlıgil C. (2019) "Prediction of Earthquake Magnitude and Direction in Kutahya and Mugla using Machine Learning Methods" 4. National Insurance and Actuary Congress,Ankara, Turkey, 24 - 25 June 2019, cover.1, number.1, page.81-82.

- **Abstract in conference proceedings**: Amr Okasha, Sabahat Şengezer, Ozancan Özdemir, Ceylan Yozgatlıgil, Ali E. Turgut, Kutluk B. Arıkan. (2021) "Modeling and Evaluation of Human Motor Learning by Finger Manipulandum" 14th International Conference on Social Robotics (ICSR 2022), Florence, Italy

- **Abstract in conference proceedings**: Ozancan Ozdemir, Michael Biehl, Nicolai Petkov(2024) "Integrating Fundamental Analysis in Machine Learning for Stock Price Prediction: The First Insights from a Comprehensive Survey Advances and Applications of Machine Learning and AI (AMALEA), Cetraro, Italy

- **Analysis Report**: Cin M., Ilhan A., Ozdemir O, Duskun Y., Korlu O. (2022) "Evaluation of Reading Skills in the Context of Gender: An Analysis with PISA 2018 Data", https://doi.org/10.13140/RG.2.2.26165.35044

Honors and Awards

- Certificate for being the most successful student among master students started in 2017 Department of Statistics, METU - September, 2019
- "4. National Insurance and Actuary Congress Poster Competition Winner",Turkey - June, 2019
- Certificate for being the first among all bachelor students graduated from Department of Statistics, METU- July 2017
- Dean's High Honor List, METU (Both Fall and Spring semesters)- 2013-2017

Talks

A Comprehensive Review of Fundamental Indicators and Machine Learning Techniques for Stock Market Forecasting *APPIS 2025 - Applications of Intelligent Systems*	January 2025 *Las Palmas, Spain*
Introduction to R Programming *Ankara University Data Science Club*	December 2024 *Ankara, Turkey*
Integrating Fundamental Analysis in Machine Learning for Stock Price Prediction: The First Insights from a Comprehensive Survey *AMALEA-Advances and Applications of Machine Learning and AI*	July 2024 *Cetraro, Italy*
Introduction to R *Ankara University Statistics Club*	May 2024 *Ankara, Turkey*
Why R? Conveniences and Challenges *Subgroup of Tree of Evolution*	March 2024 *Eskisehir, Turkey*
Introduction to Data Visualization with ggplot2 *SICSS-Summer Institute in Computational Social Science*	June 2023 *Istanbul, Turkey*
Introduction to Tree-Based Algorithms in R *TUMDER - Turkstat Member Association*	February 2022 *Ankara, Turkey*
Introduction to R *METU Statistics and Data Science Club and METU Biogen*	November 2022 *Ankara, Turkey*

Developed Packages

- **izmir**: It is an R package used for calling the data wrappers for Izmir Metropolitan Municipality's Open Data Portal. This will return all datasets formatted as Excel files (.csv or .xlsx), as well as datasets that require an API key./ February 2023
- **konya**: It is an R package used for calling the data wrappers for Konya Metropolitan Municipality's Open Data Portal. This will return all datasets formatted as Excel files (.csv or .xlsx), as well as datasets that require an API key./ August 2023
- **bursa**: It is an R package used for calling the data wrappers for Bursa Metropolitan Municipality's Open Data Portal. This will return all datasets formatted as Excel files (.csv or .xlsx), as well as datasets that require an API key./ September 2023
- **turkeyelections**: It is an R package that includes the results of general, local, and presidential elections held in Turkey between 1995 and 2023, broken down by provinces and overall national results. It facilitates easy processing of this data and the creation of visual representations based on these election results./ April 2024

Volunteer Experience

- **Event Organizer at WhyR? Turkey 2021 Pre-Meeting, Turkey**: Organized the biggest online R event in Turkey by seminars being about the usage of R in different fields and delivered them reaching over 2000 participants.-April 2021
- **Member of Organizing Committee at WhyR? Turkey 2022, Turkey**: Organized the first scientific conference specified for R in Turkey.-April 2022
- **Member of Organizing Committee at useR2024, Salzburg**: Organized one of the well-known event for R.-July 2024

Language & Interests

- **Languages**: Turkish(Native),English(Fluent),Dutch(Beginner), German(Beginner),Spanish(Beginner)
- **Interests**: Photography, Urbanism, History, Politics, Football, Movies, Books

References

- **Prof. Ceylan YOZGATLIGIL**: Department of Statistics, Middle East Technical University, TURKEY,
  E-mail: ceylan@metu.edu.tr, **Phone:** +90 (312) 210-2963
- **Prof. Nicolai PETKOV**: Bernoulli Institute for Mathematics, Computer Science, Artificial Intelligence, University of Groningen, Groningen, THE NETHERLANDS,
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- **Assist. Prof. Ali O. ILHAN**: DAAP-School of Design, University of Cincinnati, USA
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