

Ege Demirci

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RESEARCH STATEMENT

My research spans the interdisciplinary fields of machine learning and network science, with a particular focus on addressing societal challenges through computational approaches. Currently, I am focusing on the application of machine learning techniques to graph-structured data, which enables the exploration and understanding of complex networked systems.

EDUCATION

- **University of California, Santa Barbara** Santa Barbara, USA
Doctor of Philosophy - Computer Science *September 2024 - Present*
Advisor: Ambuj K. Singh
Academic Excellence Fellowship
- **Sabanci University** Istanbul, Turkey
Bachelor of Science - Computer Science and Engineering; GPA: 4.0 / 4.0 *September 2019 - June 2024*
Graduated as 1st ranked student in the Faculty of Engineering (1/609), %100 Scholarship

RESEARCH EXPERIENCE

- **Sabanci University - Mars Athletic** Istanbul, Turkey
Researcher *September 2023 - July 2024*
 - Conducted a comprehensive study on exercise habit formation, utilizing machine learning and causal inference techniques to analyze data from Mars Athletic, Turkey's largest gym chain, under the supervision of **Dr. Onur Varol**.
 - Took over the general coordination and research planning of the project, worked with three peers. Contributed to the development of a novel survival metric to assess the durability of exercise habits.
 - Led the causal inference analysis to evaluate the impact of various interventions such as group classes, personal training, and social interactions on exercise adherence.
 - Analyzed data from over 200,000 gym members, identifying key factors influencing habit formation and providing actionable insights for gym management and public health strategies.
 - First-authored a final project report detailing the methods and results of the study, and journal publication is currently in progress.
- **Viral Lab - VRLLAB** Istanbul, Turkey
Researcher *January 2022 - July 2024*
 - Conducted research on misinformation and propaganda campaigns on social media during the 2023 Turkish elections under the supervision of **Dr. Onur Varol**.
 - Contributed to the first public dataset of politicians which includes trending topics, media contacts, and follower dynamics by writing a scraper that find the X usernames of 1500 politicians who took part in Turkish politics after 2010. Conducted social network analysis to identify key actors and strategies used to influence public opinion.
 - Scraped around 1M comments from YouTube and performed sentiment analysis to track public sentiment evolution for different politicians over time. Investigated the causal relationship between popular media outlets and polarization.
 - Co-authored several whitepapers on the **#Election2023 platform**, providing real-time tools and analyses during the election cycle to detect misinformation and bot activity.
 - **Publication:** Najafi, A., Mugurtay, N., Zouzou, Y., Demirci, E., Demirkiran, S., Karadeniz, H.A., & Varol, O. (2024). First public dataset to study 2023 Turkish general election. *Scientific Reports*, 14(1), 8794.
- **Vrije University - Computational Intelligence Group** Amsterdam, Netherlands
Research Assistant *June 2022 - September 2022*
 - Worked as a research assistant under the supervision of Dr. Anil Yaman on a project aimed at solving certain environments in MuJoCo and Classic Control of GymLibrary, which is one of the Reinforcement Learning APIs.
 - Implemented artificial neural networks to solve the Cartpole, Ant, Hopper, Acrobot environments and evaluated the efficiency of the implemented solutions using appropriate performance metrics.

TEACHING EXPERIENCE

- **Sabanci University** Istanbul, Turkey
Learning Assistant *September 2021 - June 2024*
 - **IF100 - Computational Approaches to Problem Solving** course from September 2021 to June 2022, teaching Python and computational logic to all freshman students.
 - **CS210 - Introduction to Data Science** course from September 2022 to January 2024, teaching Machine Learning and Data Science techniques to 2nd and 3rd year Computer Science and Engineering students.
 - **CS414/514 - Network Science** course from January 2024 to June 2024, teaching network analysis and complex systems concepts to senior undergraduate and master Computer Science and Engineering students.
 - Assisted students during weekly recitation hours to reinforce lecture topics, prepared materials for the recitation, prepared assignments, and provided further assistance during office hours.

INDUSTRY EXPERIENCE

- **Commencis** Istanbul, Turkey
Software Engineer (Part-Time) *July 2023 - August 2024*
 - One of the four software engineers supporting the iOS side of Turkcell, Turkey's largest operator serving 35 million users. Played a key role in the renewal of Turkcell's iOS app campaign flow using Swift.
 - Collaborated closely with cross-functional teams in an Agile environment, actively participating in daily stand-ups, sprint planning, and code reviews.
 - Debugged and refined application code to enhance performance, reduce errors, and ensure stability.

SKILLS SUMMARY AND CERTIFICATIONS

- **Programming Languages:** Python, C++, JavaScript, SQL, Dart, Swift
- **Tools and Frameworks:** Scikit-learn, Pandas, Matplotlib, NetworkX, Selenium, DoWhy, Git, PostgreSQL, Gephi, Flutter, React, expressJS, nodeJS
- **Certifications:** Deep Learning Specialization by Andrew Ng @Coursera, Data Scientist with Python Track @Datacamp
- **Soft Skills:** Leadership, Teamwork, Creative Writing, Field Research, Adaptability, Communication, Problem-Solving, Project Management

VOLUNTARY WORK

- **Cayirova Sevgi Evi** Kocaeli, Turkey
Teacher *February 2020 - June 2020*
 - Visited an orphanage in Cayirova on a weekly basis during preparatory year at university.
 - Provided assistance to children aged 7-12 in the orphanage, helping with their school life and spending time together.
 - Worked collaboratively with other volunteers to ensure the success of the project and provide the best possible experience for the children.
- **75. Yil Ilkokulu** Hatay, Turkey
Employee *June 2021 - July 2021*
 - Volunteered at a primary school close to the Syria refugee camps in Hatay in June 2021.
 - Spent time with the children. Taught some basic coding concepts to the children, introducing them to the world of technology and programming.