Omer Ekmekcioglu

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Education

Warwick Business School, University of Warwick, Coventry, UK
Ph.D., ISMA Group — Sept 2022 – Present (expected 2027)
Dissertation: Bayesian Optimization of Bilevel and Multi-Objective Black-Box Problems
Advisors: Juergen Branke and Nursen Aydin

Bilkent University, Ankara, Turkey
M.S. in Industrial Engineering (GPA 3.86/4.00) — Sept 2019 – June 2022
Thesis: Topics in Optimization via Deep Neural Networks

B.S. in Electrical and Electronics Engineering — Sept 2015 – June 2019

Research Interests

Bayesian Optimization, Bilevel and Multi-Objective Optimization, Simulation Optimization, Machine Learning for Operations

Papers under Review and Working Papers

- **Bayesian Optimization of Bilevel Problems**, with Nursen Aydin and Juergen Branke **(Job Market Paper)**. Working paper (arXiv:2412.18518).
  Bilevel problems in which both the leader's and the follower's objectives are expensive black boxes. Both levels are modelled as Gaussian processes, and an acquisition strategy allocates a fixed evaluation budget across the two levels, so the follower's response is estimated rather than computed. Applications include pricing under strategic response and toll setting.
  – Presented at the SIAM Conference on Optimization (OP26), Edinburgh, June 2026; to be presented at the INFORMS Annual Meeting, San Francisco, November 2026
- **Bayesian Optimization of Multi-Objective Bilevel Problems**, with Nursen Aydin and Juergen Branke (2026). Manuscript in preparation.
  Proposes ParetS, a projected Thompson-sampling method for bilevel problems with multiple black-box objectives at both levels, in which a single coupled query returns every leader and follower objective. Covers optimistic and pessimistic follower behaviour and carries an asymptotic consistency guarantee; nested BO and evolutionary baselines need 130 and 8,128 times the evaluation budget to reach comparable solution quality.

Work in Progress

- **Bilevel Bayesian Optimization for Participatory Budgeting Mechanism Design** (2026).
- **Bayesian Optimization over Language-Model Prompt Spaces with Fidelity-Aware Noise** (2026).

Refereed Publications

- **Combining Gaussian Processes and Neural Networks as Surrogate Models in Bayesian Optimization**, with Juergen Branke and Nursen Aydin (2026). *Learning and Intelligent Optimization (LION 20)*, Lecture Notes in Computer Science. Accepted, forthcoming.
- **Comparison of Different Dental Age Estimation Methods with Deep Learning**, with B. S. Yavuz and H. Ankarali (2025). *International Journal of Legal Medicine* (Link).
- **Graph Neural Networks for Deep Portfolio Optimization**, with M. C. Pinar (2023). *Neural Computing and Applications* (Link).
- **Subset Based Error Recovery**, with D. Akkaya and M. C. Pinar (2021). *Signal Processing* (Link).

- **Provably Optimal Sparse Solutions to Overdetermined Linear Systems with Non-Negativity Constraints in a Least-Squares Sense by Implicit Enumeration**, with F. S. Aktas and M. C. Pinar (2021). *Optimization and Engineering* (Link).

Teaching Experience

Warwick Business School, University of Warwick, Coventry, UK
Seminar Tutor — 2024 – Present

- Analytics in Practice; Business Analytics; Forecasting; Introduction to Statistics
- Student evaluation 4.7 / 5 in the most recent term. Designed seminar material in R and Python.
- Teaching Excellence Certificate for Outstanding Contribution to Student Learning, WBS, 2025/26.

Bilkent University, Ankara, Turkey
Teaching Assistant, Department of Industrial Engineering — 2019 – 2022

- Introduction to Optimization; Modelling and Methods in Optimization; Engineering Economic Analysis

Research Experience

UCL School of Management, London, UK
Research Assistant — Oct 2023 – Present

- Survey analysis on employee preferences for AI- versus human-led team decisions (with Sunny Lee); acknowledged in the resulting working paper
- Decision-support tool for thalassemia treatment planning, used by physicians (with Ersin Korpeoglu and Kenan Arifoglu)
- Data projects with Steve Yoo, Dongyuan Zhan, Daniel Ershov and Mimansa Bairathi

Talks and Conferences

- INFORMS Annual Meeting, San Francisco, USA (scheduled) — November 2026
- SIAM Conference on Optimization (OP26), Edinburgh, UK — June 2026
- Learning and Intelligent Optimization (LION 20), Milan, Italy — June 2026
- EUROPT 2025 Conference, Southampton, UK (attended) — June 2025
- EUROPT Workshop on Advances in Continuous Optimization — 2021

Computer and Language Skills

Programming: Python (PyTorch, BoTorch, GPyTorch, Ax), R, MATLAB, GAMS, Xpress, C++
Languages: Turkish (Native), English (Fluent), French (Conversational)

References

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