Metin Ersin Arıcan

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RESEARCH INTERESTS

I am mainly interested in foundational topics like model theory, mathematical logic, and formal mathematics.

EDUCATION

Boğaziçi University   İstanbul / Turkey

MSc. In Mathematics, (Current) GPA: 4.00/4.00   2023 - 2025
- (Potential) Thesis Topic: VC-density calculations in pairs of stable/o-minimal/strongly minimal theories
- Advisor: Assoc. Prof. Ayhan Günaydın
- Some Coursework: O-minimal theories, algebraic number theory, modern algebraic geometry

Boğaziçi University

B.S. in Electrical and Electronics Engineering, GPA: 3.99/4.00   2018 - 2023
- Senior Project: Synchronization in several coupled van der Pol oscillators
- Advisor: Prof. Yağmur Denizhan
- Some Coursework: Linear multivariable systems theory, chaotic dynamics, nonlinear control, signal processing; functional analysis, representation theory, algebraic topology, measure theory, algebra I & II.

Boğaziçi University

B.S. in Physics, GPA: 3.99/4.00   2018 - 2023
- Some Coursework: Lie groups and lie algebras, statistical mechanics, relativistic electromagnetic theory.

ACADEMIC EXPERIENCE

Boğaziçi University

Graduate Teaching Assistant   2024-Present
- Introduction to axiomatic set theory
- Multivariable calculus

ETH Zurich, *Computer Vision Lab*

Undergraduate Research Assistant   2021-2022
- Supervisor: Assoc. Prof. Ender Konukoğlu
- Focused on the spatial inductive bias of convolutional neural networks (CNN), which offers an unsupervised solution to image restoration, often referred to as 'Deep Image Prior'. However, the quality of the restored image strongly depends on the architecture. Thus, we

introduced a novel training-free neural architecture search (NAS) approach. My contributions were formulating novel metrics to build a NAS framework, designing the experimentation, developing most of the codebase and writing the manuscript, which was accepted for **CVPR 2022**.

Boğaziçi University, Microwave Radar and Communications Laboratory

Undergraduate Research Assistant   2019-2021
- Supervisor: [Assoc. Prof. Ahmet Öncü](#)
- Developed graphical user interfaces to ease the programming of various digital circuits.
- Worked on the design and verification of digital circuits.

[TÜBİTAK](#) (The Scientific and Technological Research Council of Turkey)

Physics Instructor   2019
- Gave lectures and held problem-solving sessions on physics topics like electromagnetism, mechanics, and modern physics to a class of students who were nominees of the physics olympiad team of Turkey.

PROFESSIONAL EXPERIENCE

[TÜBİTAK BİLGEM](#) (Information Security Research Center)

Kocaeli / Turkey

Cryptanalyst Intern   2022-2023
- Prepared presentations and reports explaining linear and differential cryptanalysis of DES-like block ciphers and implemented their algorithms from scratch in Python.
- Prepared presentations and reports explaining Grover's and Shor's algorithms and how can they be used to break RSA.
- Prepared presentations and reports explaining lattice-based cryptography and the Fiat-Shamir transform.

[SESTEK](#)

İstanbul / Turkey

R&D Intern   2021
- Studied voice activity detection systems using recurrent neural networks and handcrafted features.
- Designed experiments and created benchmarks for the company to compare state-of-the-art voice activity detection systems.

WORKSHOPS

[eCHT](#) Homotopy Theory Course

January – May 2024
- Online course on homotopy theory.
- Lecturer: [Asst. Prof. Jack H. Carlisle](#).

[Directed Reading Program (DRP) Turkey](#)

June – August 2023
- Studied categorical logic and topos theory.
- Gave a talk at Sabancı University at the end of the program.
- Mentor: Praneet Srivastava, PhD student at University of Bonn

TALKS

Sabancı University   Istanbul / Turkey
- ■ An Introduction to Categorical Logic and Topoi   August 2023

SCHOLARSHIPS AND AWARDS

- 2210 TÜBİTAK[1] Graduate Scholarship   2023-2025
- 2205 TÜBİTAK Undergraduate Scholarship   2018-2025
- **Finalist out of 75 teams** - Turkish Airlines Travel Datathon and Machine Learning Competition 2019
- **437th among 2 million** - Turkish National University Entrance Exam   2018
- **Silver Medalist** – International Physics Olympiads   2018
- **Bronze Medalist** – European Physics Olympiads   2018
- **Honorable Mention** – Asian Physics Olympiads   2018
- **Silver Medalist** – Turkish Physics Olympiads   2017

PUBLICATIONS

1. **ISNAS-DIP: Image-Specific Neural Architecture Search for Deep Image Prior** <u>Arican, M.</u>*, Kara, O.*, Bredell, G., Konukoğlu, E. (* denotes equal contribution) IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022 [Paper][Code][Video]

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[1] The Scientific and Technological Research Council of Turkey