

Atahan Haznedar

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Profile

Mathematics Master's graduate from the University of Copenhagen specializing in computational, metric, and applied algebraic geometry. Actively seeking a PhD position in applied algebraic geometry to utilize my knowledge in algebraic geometry, non-linear optimization, and computer algebra systems (CAS) alongside numerical solvers.

Education

The University of Copenhagen

2024 - 2026

MS in Mathematics

- **Danish Grading:** 10.8125/12 (**GPA:** Approx. 3.8)
- **Coursework:** Advanced Vector Spaces, Algebraic Topology, Algebraic Topology 2, Homological Algebra, Commutative Algebra, Geometry 2, Algebraic Geometry, Geometric Topology, Algebraic Geometry 2, Applied Algebra and Geometry
- **Master's Thesis:** Polar Varieties and Applications.

Boğaziçi University

2019 - 2024

BS in Mathematics

- **National Ranking:** Scored in the top 0.9% of the National University Entrance Exam (2019).
- **GPA:** 3.43/4.0
- **History:** Transferred from Chemistry major (2019–2021, GPA: 3.28) to Mathematics major. Finished in 2.5 years with extra four master's courses.
- **Coursework:** Singularity Theory, Enumerative Combinatorics, Graph Theory, Functional Analysis, Non-linear Dynamics, Nonlinear Control Theory, Mathematical Logic, O-Minimal Theory,
- **Bachelor's Thesis:** Gröbner Bases and Their Applications

Skills

Languages: Turkish (Native), English (IELTS 7.5), Danish (Module 4, B1)

Programming Languages: Julia (OSCAR, HomotopyContinuation.jl), Python (TensorFlow, NumPy, SymPy), Octave, SQL

Technologies: Microsoft Office Suite, Git/GitHub

Academic Projects

DresdenDIR (How does MLdegree change with linear change of coordinates)

August 2026 - September 2026

Oskar Henriksson, Yue Jiao

Investigating how the maximum-likelihood degree of a projective toric model changes under the action of the general linear group. The project studies which ML-degree values are attainable and aims to stratify the space of coordinate transformations according to where and by how much the ML degree drops. Currently only diagonal matrices are well studied, this is a project on expanding it.

Master's Thesis (Polar Varieties and Its Applications)

February 2026 - June 2026

Nidhi Kaihnsa

Given a projective variety and a projective subspace, one can associate special subvarieties known as classical polar varieties and reciprocal polar varieties. My master's thesis explores their affine and projective geometry. Also, I showcase how their degrees—called polar degrees—are related to Euclidean distance degree, multidegree, and complexity of polyhedral distance optimization problems.

Furthermore, building on the notion of higher-order Euclidean distance loci, I defined a new object called higher-order polyhedral distance loci, generalizing the polyhedral distance optimization with a higher-order contact. Currently, I am working with Nidhi Kaihnsa, on computations, their geometry, and their relationship with

higher-order polar degrees.

Project Outside the Course Scope

Nidhi Kaihnsa

November 2025 - January

2026

I did a literature review on distance optimization problems to build a foundation in metric algebraic geometry. Specifically, I studied Euclidean distance and polyhedral distance optimization problems for real varieties, which include symbolic computations to numerical methods, and implemented the algorithms using HomotopyContinuation.jl and OSCAR package in Julia. I also studied the properties of Voronoi diagrams for the corresponding norms.

Project Outside the Course Scope

Elisenda Feliu

September 2025 - October

2025

In this project, I studied real algebraic geometry, specifically focusing on literature concerning positive solutions for sparse polynomial systems. I worked with Gale dual systems to have a certificate of existence of a positive solution and build a sharp upper bound of the number of positive solutions by the systems structure. Afterward, I implemented the results with the OSCAR package in Julia to check the results.

Directed Reading Program - Bilkent University

Müfit Sezer

July 2023 - October 2023

I did readings on computational algebraic geometry, specifically on elimination theory. Building the foundation for future applied algebra knowledge.

Bachelor Thesis - Project

Müge Taşkın

Feb 2023 - June 2023

My bachelor's thesis was "Gröbner Bases and Their Applications" which served as my foundation in computational algebraic geometry. I worked on their existence, and studied the algorithms for computations and their applications in algebra and geometry.

Independent Study

Muhittin Mungan

May 2021 - June 2023

We did readings on geometric combinatorics, convex geometry, and implemented the algorithm in "[Computing linear extensions for polynomial posets subject to algebraic constraints](#)" in the fitness landscape model to understand the linear extensions of partially ordered sets occurring in evolutionary biology problems.

Conferences, Organizations and Activities

DresdenDIR: Combinatorics in Algebraic Statistics and Game Theory [↗](#)

Aug 2026

Workshop on Real Applied Algebra [↗](#)

March 2026

New Perspectives on Discriminants and their Applications [↗](#)

July 2025

Graphs Groups and Automata [↗](#)

May 2024

Tutam Tutam Matematik [↗](#)

May 2022

Certificates

Deep Learning Specialization by DeepLearning.ai [↗](#)

Machine Learning Course by Stanford University [↗](#)

Machine Learning Crash Course by Google [↗](#)

TensorFlow Developer by DeepLearning.ai [↗](#)

Volunteering

Lindyhop Dance Teacher at SwingShoes

2026-

Copenhagen Marathon

2025

Danish Coffee Festival

2025

Matematik Dünyası

2020-2023

Sport Istanbul

2020-2021

Lindyhop Dance Assistant at Swing Istanbul

2018-2021