

Ömer Avcı

CONTACT INFORMATION

Boğaziçi University
Department of Mathematics

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TB 121

RESEARCH INTERESTS

Elementary Number Theory, Analytical Number Theory, Elliptic Curves

EDUCATION

Boğaziçi University, Istanbul, Turkey
Department of Mathematics

M.S. in Mathematics (2021 -)

- GPA: TBD

Boğaziçi University, Istanbul, Turkey
Department of Electrical & Electronics Engineering

B.S. in Electrical & Electronics Engineering (2016 - 2021)

- GPA: 3.46/4.00

Boğaziçi University, Istanbul, Turkey
Department of Mathematics

B.S. in Mathematics (2018 - 2021)

- GPA: 3.46/4.00

TEACHING EXPERIENCE

2022-2023/1 Teaching Assistant, MATH 111 Introduction to Mathematical Structures
2022-2023/1 Teaching Assistant, MATH 202 Differential Equations
2021-2022/3 Teaching Assistant, MATH 202 Differential Equations
2021-2022/2 Teaching Assistant, MATH 201 Matrix Theory
2021-2022/2 Teaching Assistant, MATH 162 Discrete Mathematics
2016–2019 Mentor, International Mathematical Olympiad Training Camp held by TUBITAK (The Scientific and Technological Research Council of Turkey).

HONORS AND AWARDS

2021 Honor Certificate, awarded by Boğaziçi University.
2016–2021 Excellent Achievement Scholarship, awarded by Boğaziçi University.
2016–2021 Full Undergraduate Scholarship, awarded by TUBITAK.
2016 Bronze Medal, International Mathematical Olympiad, Hong Kong.
2016 Silver Medal, Balkan Mathematical Olympiad, Tirana, Albania.
2015 Gold Medal, National Mathematical Olympiad.
2013 Gold Medal, Junior Balkan Mathematical Olympiad, Antalya, Turkey.
2012 Silver Medal, National Primary Schools Mathematical Olympiad.

UNDERGRADUATE PROJECTS

Minimum Enclosing Ball Problem Spring 2020.

- The project is done under the supervision of Prof. Bülent Sankur and Prof. Çağatay Candan as a part of Special Project course.

Abstract: Given $\mathbf{X} := \{x_1, x_2, \dots, x_m\} \subseteq \mathbb{R}^k$ we propose and analyze algorithms for the problem of computing the center and the radius of the minimum enclosing ball of \mathbf{X} . The algorithm is a descent algorithm with a proper initialization applied to the dual formulation of the minimum enclosing ball problem. We establish that

this algorithm converges and we give statistical comparison of our algorithm with Yildirim's $(1 + \epsilon)$ - approximation algorithm.

On the Existence of Generalized Large Zsigmondy Primes Summer 2020.

- The project is done under the supervision of Prof. Alp Bassa as an independent summer project. (An interested reader is referred to <https://arxiv.org/abs/2011.06136>)

Abstract: If $a > b$ and $n > 1$ are positive integers and a and b are relatively prime, then a *large Zsigmondy prime* of (a, b, n) is a prime p such that $p \mid a^n - b^n$ but $p \nmid a^m - b^m$ for $1 \leq m \leq n - 1$ and either $p^2 \mid a^n - b^n$ or $p > n + 1$. We classify all the triples (a, b, n) for which no large Zsigmondy prime exists.

Expanding CKKS Library for String Operations Fall 2020.

- The project is done under the supervision of Prof. Emin Anarim as a part of Senior Project course.

Abstract: In this project, we focus on expanding the HEAAN Library for string operations. We choose CKKS scheme for our intentions because of its widespread usage areas, its effectiveness and robustness.

PUBLICATIONS & PREPRINTS	May 2021	Generalization of Apollonius Circle https://arxiv.org/abs/2105.03673
	Nov 2020	A Simple Proof for the Existence of Generalized Large Zsigmondy Primes https://arxiv.org/abs/2011.06136
OTHER ACTIVITIES	2021	I organized a mathematical olympiad in collaboration with Istanbul University.
	2019	I organized a mathematical olympiad in collaboration with Medipol University.
	2016-2021	I attended multiple Bahar Mathematics Meeting as lecturer.
RELEVANT SKILLS	Programming:	MATLAB, C++.
	Applications:	LaTeX, MS Office.
	Languages:	English (Fluent), Turkish (Native).
RELATED COURSEWORK		<ul style="list-style-type: none"> • Graduate: Number Theory, Algebraic Number Theory, Real Analysis I&II, Algebra I&II. • Undergraduate: Elementary Number Theory I&II, Introduction to Analytic Number Theory, Elliptic Curves, Valuations & p-adic Numbers, Complex Analysis I&II.