Maciej Zięba

MATHEMATICIAN
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Citizenship: Poland
Place of residence: Niepołomice $\longleftrightarrow$ Krakow, Poland

About me: I use my skills as an applied mathematician to solve practical problems by applying mathematical theories and concepts. I am currently in my second year of doctoral school, where I am continuing my education in this field. In addition to my academic pursuits, I have gained experience using my knowledge to analyze cryptocurrency models and improve their mathematical foundations in the field of decentralized finance. My expertise enables me to combine theory and practice, using mathematics to tackle real-world challenges.

EXPERIENCE

- **Mathematician**
  Synthetify & Invariant · **Part-time**
  Sep 2021 - Present

  – I have used my mathematical expertise to create financial models for the cryptocurrency sector.

  – I have developed models for automated market makers (AMMs), bonds, farms, and active liquidity management.

- **Mathematics Tutor**
  Self-employed
  Dec 2016 - Present

  – I have extensive experience teaching math to students with various levels of comprehension.

  – I have successfully tutored over 1100100_2 individuals in the subject.

  – I am able to modify my teaching methods to suit the needs of individual students.

  – I use various techniques and tools, such as interactive exercises, visual aids, and hands-on activities, to assist students in learning and remembering new ideas and abilities.

- **Tutor - algebra and calculus**
  Pedagogical University of Cracow · **Freelance**
  Oct 2021 - Jun 2022

  – I taught calculus and linear algebra to university students.

  – My responsibilities included explaining fundamental concepts, demonstrating problem-solving techniques, and applying concepts to real-world situations.

  – I also taught more advanced concepts to students who had prior knowledge of the subject.

  – My responsibilities included developing and delivering lectures, leading discussions, creating materials such as homework assignments and exams, and providing support and guidance to students.

- **Mathematics Teacher**
  Galileusz Bochnia · **Freelance**
  Jan 2020 - Jun 2021

  – I have experience teaching math to students at various levels of education.

  – I have prepared students for math examinations at the elementary, high school, and university levels.

  – My responsibilities included reviewing and practicing math concepts and skills with students and preparing them for standardized tests and exams.

EDUCATION

- Doctor of Philosophy, Mathematics at Pedagogical University of Cracow, 2021 - 2026.

  I produced various research articles throughout my bachelor's degree. This experience helped me to develop a strong foundation in research skills and knowledge, which contributed to mine decision to go to doctoral school.

- Bachelor of Science, Mathematics at Pedagogical University of Cracow, 2018 - 2021.
  Individual Curiculum of Studies (Commutative Algebra and Algebraic Geometry)

SKILLS

Rust ∗ Python ∗ LaTeX ∗ MS Excel + VBA ∗ Maple

RESEARCH INTERESTS

- Decentralized Finance (use of smart contracts to automate and improve the efficiency of financial transactions).

- Traditional Finance (mathematical models in finance).

- Algebraic Curves, Commutative Algebra (symbolic powers of ideals, containment problems), Combinatorics (curve arrangements, hyperplane arrangements, graphs).

SELECTED PUBLICATIONS

1. Generic projections of the H_4 configuration of points
   Advances in Applied Mathematics
   Sep 15, 2022

2. On Yoshinaga's arrangement of lines and the containment problem
   BULLETIN MATHÉMATIQUE de la Société des Sciences Mathématiques de Roumanie
   May 12, 2021

3. A family of hyperbolas associated to a triangle
   Analytic and Algebraic Geometry 3, Łódź University Press
   Nov 1, 2019

SELECTED TALKS

- *Generic projections of the H_4 configuration of points.*
  Subvarieties in Projective Spaces and Their Projections, Oberwolfach (Germany), 27 November - 3 December 2022.

- *On H_4 configuration of points in $\mathbb{P}^3$.*
  Effective Methods in Algebraic Geometry, Krakow (Poland), 20 - 24 June 2022

- *Cayley-Bacharach Theorem.*
  Pidstryhach Readings 2020, Lviv (Ukraine), 26 - 28 May 2020.

- *On Yoshinaga's arrangement of lines and the containment problem.*
  Geometry, Algebra and Combinatorics of Moduli Spaces and Configurations IV, Toblach (Italy), 23 - 29 February 2020.

PROJECTS

- European Networking of STEAME School Students for Exchange and Co-creation.

  Creation and management of STEAME students platform.

AWARDS, SCHOLARSHIP, HONORS

- Oberwolfach Leibniz Graduate Students, OWLG.

- International scholarship exchange of doctoral students and academic staff, PROM.

- Rector Scholarship for the best students, during all academic years.

GRANTS

- Najlepsi z Najlepszych 4.0 (The best from the best (students) 4.0), scientific grant for the best undergraduate students, Ministry of Science and Higher Education, received in October 2019.