Mochammad Zulfikar Aditya

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EDUCATIONS

Bandung Institute of Technology — Bandung, Indonesia
Master of Science - Mathematics; GPA: 3.63/4.00 — *Aug 2019 – Oct 2020*
Courses: *Group Theory, Graph Theory, Association Scheme, Functional Analysis, Algebraic Graph Theory, Graph on Algebraic Structure, Matrix Analysis, Galois Theory.*

Bandung Institute of Technology — Bandung, Indonesia
Bachelor of Science - Mathematics; GPA: 3.65/4.00 — *Aug 2015 – Jul 2019*
Courses: *Linear Algebra, Modern Algebra, Intro to Graph Theory, Cryptography, Coding Theory, Real Analysis, Complex Analysis.*

SKILLS SUMMARY

- **Math Skills:** Field Theory, Galois Theory, Quadratic Number Field, Graph Theory, Hadamard Matrix
- **Languages:** English (Fluent), Indonesian (Native)
- **Programming:** LaTeX, Python, HTML, Java, MATLAB

EXPERIENCES

Math Olympiad Tutor — Bogor, Indonesia
Freelance — *Mar 2023 – present*
- ○ **Teaching**: Teaching math olympiad (Algebra, Combinatorics, Geometry, and Number Theory) for high school students.
- ○ **Math Olympiad Camp**: Train students in a math camp consisting of 20-30 teaching hours in 3-5 days.
- ○ **National Science Olympiad**: Prepare students for regional and national rounds.

Content Quality Control (Full-time) — Bogor, Indonesia (Hybrid)
Pahamify — *Nov 2020 – Jun 2022*
- ○ **Math Reviewer**: Reviewed and checked at least 45 to 50 mathematics problems per week.
- ○ **Analytical Research**: Conducted cognitive and learning dimensions based on the current curriculum.
- ○ **Teaching Consultant**: Communicated and encouraged teachers to improve their skills for writing good problems.

Math Teacher(Part-time, Contract) — Bandung, Indonesia
Excelsis Learning Center — *Aug 2019 – Jan 2021*
- ○ **Private Teacher**: Taught Mathematics (Calculus, Linear Algebra, Intro to Differential Equation) for High School and Undergraduate students.
- ○ **Tutorial**: Conducted teaching based on the Cambridge curriculum for student groups of 1-5 persons.

Teaching Assistant and Grader (Part-time, Contract) — Bandung, Indonesia
Math Department, Bandung Institute of Technology — *Jan 2018 – Dec 2021*
- ○ **Tutorial**: Conducted tutorial sessions for students in Basic Calculus and Calculus for Engineering/Biology.
- ○ **Lab Assistant**: Handled a session of computational lab: Numerical Mathematics, Intro to Computational Mathematics, and Intro to Programming.
- ○ **Grading**: Graded students' homework such as Linear Algebra and Calculus.
- ○ **Consulting**: Handled a session of math consulting for undergraduate students two times a week.

PROJECTS

- **Quadratic Number Fields (Number Fields, Elementary Number Theory)**: Reading Project led by Gaurish Korpal (Ph.D. Candidate at Arizona University) focusing on understanding the Quadratic Number Field to learn Diophantine Equations. (Jan '24)

- **On the Topological Indices of Zero Divisor Graphs of Some Commutative Rings (Zero-Divisor Graph, Commutative Ring, Topological Indices)**: Research project funded by ITB Research group focusing on finding some topological indices of a zero divisor graph over ring or multiplication ring of prime-power modulo. (Feb '22)

- **Exploration of Mutually Unbiased Biangular Regular Set over Butson-Type $BH(n,3)$ on Constructing Association Scheme (Association Scheme, Biangular Regular Set, Hadamard Matrix)**: Master thesis focusing on exploration of determining whether it's possible to construct an association scheme based on Mutually Unbiased Biangular Regular Set using Hadamard Matrix of type $BH(n,3)$. (Aug '20)

- **Jacobson Graph over $\mathbb{Z}_n$ (Ring Theory, Graph Theory, Elementary Number Theory)**: Undergraduate thesis focusing on finding the relation between graph properties of Jacobson Graph and ring properties of $\mathbb{Z}_n$. (May '19)

WORKSHOPS AND SEMINARS

ITB International Virtual Course: Combinatorics Perspective — Bandung, Indonesia (Online)
Participants and doing final research projects on graph theory — *5–17 Sep 2022*

ICW-HDDA-X — Sanur, Indonesia (Online)
Parallel speaker presenting "Jacobson Graph over $\mathbb{Z}_n$" (published) — *12–15 Oct 2020*

CIMPA Research School on Group Actions in Arithmetic and Geometry — Yogyakarta, Indonesia
Participants — *17–28 Feb 2020*

The 3rd ICCGANT — Jember, Indonesia
Parallel speaker presenting "Jacobson Graph over $\mathbb{Z}_n$" — *26–27 Oct 2019*

Publications

- **Jacobson Graph over $\mathbb{Z}_n$**: Mochammad Zulfikar Aditya, Intan Muchtadi-Alamsyah. Published in Journal of Physics: Conference Series Volume 1722 (Jan '21).
- **On the Topological Indices of Zero Divisor Graphs of Some Commutative Rings**: Fariz Maulana, Muhammad Zulfikar Aditya, Erma Suwastika, Intan Muchtadi-Alamsyah, Nur Idayu Alimon, Nor Haniza Sarmin. Published in Journal of Applied Mathematics and Informatics: Volume 42, No. 3 (May '24).

Honors and Awards

- Honorable Mention at International Mathematics Competition for University (Jul '18)
- Bronze Medal at National Science Olympiad for Undergraduates (May '18)
- First Prize at Calculus Cup by Jakarta National University (Sep '17)
- Bronze Medal at National Science Olympiad for High School (Sep '14)

Volunteering Experiences

- **Founder of Purist MA LOL** — Online
  Creating a small community of Pure Math students in ITB Math Departments. — *Sep 2018 – Present*
- **Customer Relation at AIESEC in Bandung** — Bandung, Indonesia
  Manage outgoing volunteer participants from Bandung from departure to arrival. — *Mar 2019 – Jan 2020*
- **Committee of 5th BIGTC (Biennale International Group Theory Conferences)** — Bandung, Indonesia
  Volunteering as a committee helping in the logistics section. — *Jul 2019*
- **English Teacher at AIESEC in Assumption University** — Nakhon Pathom, Thailand
  Teaching English to Elementary Schools in rural areas with fun and interactive concepts. — *Dec 2018 – Feb 2019*