

Mahmoud Khaled Abdelkader

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Giza, Egypt

SUMMARY

Dynamic Mathematics graduate with a Bachelor's degree in Mathematics and a Master's degree in Applied Mathematics. Skilled in Optimization and Operational Research, with a focus on strategic algorithms and decision-making processes. Experienced in teaching, mentoring, and academic presentations. Committed to community service and volunteer work.

EDUCATION

- **Heidelberg University** Apr.2024 - Jun.2024
Visiting Scholar Heidelberg, Germany
 - Supervised by Dr. Michael Winckler, focusing on computational optimization for complex systems.
- **University of Cape Town, African Institute for Mathematical Science (AIMS)** Sep. 2023 - Jul. 2024
Master's degree in Applied Mathematics Cape Town, South Africa
 - Thesis: "Mathematical Modelling and Implementation of Game Strategy for the Board Game Quoridor".
 - Relevant Coursework: Nonlinear Optimization, Game Theory, Mathematical Modeling.
- **Helwan University** Sep. 2022 - May 2023
Pre-Master Helwan, Egypt
 - Courses: Functional and Numerical Analysis, Abstract Algebra, Ordinary Differential Equations, Partial Differential Equations, and Topology.
- **Helwan University** Sep. 2016 - Jul. 2020
Bachelor of Science in Mathematics Helwan, Egypt
 - Gained a solid knowledge in Operational Research, Real Analysis, and Linear Algebra.

TEACHING AND MENTORING EXPERIENCE

- **Canadian International College "CIC"** Sep. 2024 - Present
Assistant Lecturer (Part-Time) Cairo, Egypt
 - Courses Taught: Calculus I & II, Linear Algebra, Probability & Statistics.
 - Responsibilities: Prepare and deliver lectures, facilitate tutorials, and design assignments.
- **El-Gazeera Higher Institute for Engineering and Technology** Sep. 2024 - Present
Assistant Lecturer Cairo, Egypt
 - Courses Taught: Calculus I & II & III, Linear Algebra, Discrete Math, and Numerical Analysis.
- **El-Gazeera Higher Institute for Engineering and Technology** Oct. 2022 - Aug.2023
Teaching Assistant Cairo, Egypt
 - Courses Taught: Calculus I & II & III, Linear Algebra, Discrete Math, and Numerical Analysis.
- **Helwan University** Sep. 2020 - Apr. 2021
Teaching Assistant Helwan, Egypt
 - Guided student projects on linear and nonlinear programming methods.
 - Mentored undergraduates in applying computational tools (Python, CPLEX) to real-world optimization problems.

PUBLICATIONS

- [1] Fathy, E., & Khaled Abdelkader, M. (in preparation). **A novel methodology for multilevel quadratic programming under interval-valued intuitionistic fuzzy uncertainty.**
 - Fuzzy-based linearization approach for hierarchical decision-making; validated with numerical simulations.
- [2] Fathy, E., & Khaled Abdelkader, M. (in preparation). **Optimization algorithms for multilevel solid transportation problems in a rough interval environment.**
 - Constraint, interactive, and fuzzy frameworks for uncertainty resolution in supply chain contexts.

CONFERENCES AND WORKSHOPS

- **After Research-Party** May 2024
Heidelberg University
 - Presented a research poster on 'Mathematical Modelling and Game Strategy for Quoridor'.
- **Siyakhula Event** Mar 2024
AIMS, South Africa
 - Presented a research poster on 'Mathematical Modelling and Game Strategy for Quoridor'.
- **Linear and Nonlinear Optimization Workshop** Mar 2024
AIMS, South Africa
 - Participated in a 3-week workshop focusing on linear and nonlinear optimization.
- **Spring School "On Symmetries of Differential & Difference Equations and Their Applications"** Oct 2023
Stellenbosch, South Africa
 - Participated in the Spring School on symmetries of differential and difference equations.
- **Quadratic Forms, Rings and Codes** Aug 2023
Laboratoire de Mathematiques de Lens, France
 - Participated in an online conference on quadratic forms, rings, and codes.
- **Data Analysis using Advanced Computational Techniques** Jul 2023
Amity University Kolkata, North India, Online
 - Participated in a five-day faculty development program on data analysis.
- **Categories, Rings and Modules** Jan 2023
Online
 - Participated in a conference in honor of Alberto Facchini.
- **Rings, Algebras, and Category Towards Coding and Computer Algebras** Dec 2022
CIMPA School, Helwan University
 - Participated in a winter school on rings, algebras, and category theory.
- **Topology and its Applications** Jul 2019
Helwan University
 - Participated in a conference on topology and its applications.

AWARDS AND ACHIEVEMENTS

- **Grant to Organize IndabaX Egypt 2025** Feb 2025
Deep Learning Indaba and MasterCard Foundation
 - Funding Amount: 3000 USD
- **Visiting Scholar Funding** Apr 2024 - May 2024
Heidelberg University's HGS MathComp
 - Funding Amount: 3200 EUR
- **Fully Funded Master's Scholarship** Oct 2023
Cape Town University, South Africa
 - Funding Source: [Mastercard Foundation](#) and [AIMS](#)
 - Funding Amount: 9000 USD
- **Ideal Student Competition** Dec 2019
Helwan University
 - Seventh Place in the Ideal Student Competition at Helwan University.
- **Ideal Student Certificate** Dec 2019
Faculty of Science, Helwan University
 - Received the Ideal Student Certificate from the Faculty of Science.

PROFESSIONAL MEMBERSHIPS

- **Operation Research Society** Student Member May 2024 - Present
- **European Mathematical Society** Student Member Apr 2024 - Apr 2026

SKILLS

- **Programming Languages:** [Python](#), C++, R
- **Mathematical Software:** CPLEX, GeoGebra, plotly
- **Data Analysis:** R software, Microsoft Office
- **Other Tools:** Canva, Emaze

VOLUNTEER AND SOCIAL WORK

- **Community Service**

Mar 2024

Mastercard Foundation Scholar

- Engaged in educational tutoring at Muizenberg High, South Africa.

- **Siyakhula Event**

Mar 2024

AIMS, South Africa

- Volunteered to boost Africa's mathematical sciences.

- **CIMPA (Algebra Winter School)**

Dec 2022

Helwan University

- Facilitated academic exchanges and supported workshop organization.

PERSONAL INFORMATION

Date of Birth: 22 Dec. 1997

Citizenship: Egyptian

REFERENCES

1. **Prof. Susan Eldeken**

Mathematics Department, Helwan University

Email: Sfdeken@science.helwan.edu.eg

2. **Dr. Karin-Therese Howell**

Academic Director, African Institute for Mathematical Science

Email: howell@aims.ac.za

3. **Dr. Eman Fathy**

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