Mahmoud Khaled Abdelkader

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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. Seeking a challenging PhD opportunity to advance knowledge and expertise in Mathematics.

Education

Apr.2024 - Jun.2024 — **Fully-funded internship**, *Heidelberg University*, Heidelberg, Germany. Invited to Heidelberg University's HGS MathComp visiting program for a research project. Supervised by Dr. Michael Winckler. Stay scheduled for 6 weeks starting from April 21, 2024.

Sep. 2023 - Jul. 2024 — **Master's degree**, *University of Cape Town, AIMS*, Cape Town, South Africa **(Fully Funded Scholarship)**

Sep. 2022 - May 2023 — **Pre Master**, *Helwan University*, Helwan, Egypt

2016 - 2020 — **Bachelor of Science in Mathematics**, *Helwan University*, Helwan, Egypt **Total GPA =3.3/4.** Graduated with "very Good" (82.47%).

Research Interests

Feb.2024 - Jul.2024 — **Optimization and Operational Research:**
My master's project title was "Mathematical Modelling and Implementation of Game Strategy for the Board Game Quoridor." This project involves developing and evaluating strategic algorithms, such as Minimax, Alpha-Beta Pruning, and Monte Carlo Tree Search, to master the game dynamics and optimize decision-making processes.

Mar. 2024 — Participated in a 3-week workshop at AIMS South Africa during my master's program, focusing on linear and nonlinear optimization. Topics covered included optimality conditions, KKT conditions, constraint qualifications, and solution techniques.

2018 - 2019 — Achieved excellent grades in an Operational Research (OR) course during my bachelor's degree at Helwan University, demonstrating a strong foundation in that field.

Teaching and Mentoring Experience

Sep. 2024 - Present — **Assistant Lecturer**, *Canadian International College "CIC"*, Part Time.

Sep. 2024 - Present — **Assistant Lecturer**, *El-Gazeera Higher Institute for Engineering and Technology*, Cairo.

Oct. 2022 - Aug.2023	**Teaching Assistant**, *El-Gazeera Higher Institute for Engineering and Technology*, Cairo.
Sep. 2020 - Present	**Freelance Mathematics lecturer**, *Online teaching*.
Sep. 2020 - Apr. 2021	**Teaching Assistant**, *Mathematics Dep., Faculty of Science, Helwan University*, Helwan.

Seminars & Schools

25-27 Oct. 2023	Spring School "On Symmetries of Differential & Difference Equations and Their Applications", Stellenbosch, South Africa
31 Aug. 2023	Quadratic Forms, Rings and Codes, Laboratoire de Mathématiques de Lens, France
24-28 Jul. 2023	Five days faculty development program on 'Data Analysis using Advanced Computational techniques', Department of Statistics and Department of Mathematics, Amity University Kolkata, North India
27-28 Jan. 2023	Categories, Rings and Modules, a conference in honor of Alberto Facchini, Online
10-21 Dec. 2022	Rings, Algebras, and Category Towards Coding and Computer Algebras, CIMPA school, Helwan University
24 Jul. 2019	*Topology and its Applications*, Helwan University.

Posters

May. 2024	Presented a research poster on 'Mathematical Modelling and Game Strategy for Quoridor' at After Research-Party, Heidelberg University.
Mar. 2024	Presented a research poster on 'Mathematical Modelling and Game Strategy for Quoridor' at Siyakhula event, AIMS South Africa.

Awards & Achievements

Feb.2025	Have been accepted to organize an IndabaX Egypt event in 2025. Funding Source: Deep Learning Indaba and MasterCard Foundation. Funding Amount: 7000 USD
Apr.2024 - May.2024	Have been Invited to Heidelberg University's HGS MathComp visiting program for a research project. Supervised by Dr. Michael Winckler from April 21, 2024 to 29 May 2024. Funding Source: IWR Heidelberg University Funding Amount: 3200 EUR
Oct. 2023	Have been selected for a fully funded scholarship to study a Master's degree at Cape Town University, South Africa. Funding Source: Mastercard foundation and AIMS Funding Amount: 9000 USD
Dec. 2020	Seventh Place in the Ideal Student Competition at Helwan University.
Dec. 2020	Ideal Student Certificate, Faculty of Science.

Memberships

May. 2024	Operation Research Society student member.
Apr. 2024	European Mathematical Society student member.

Skills: LaTeX, C++, Python, R software, CPLEX Software, Microsoft Office, GeoGebra, plotly, Canva,

Languages: Arabic(native), English (Upper Intermediate), French (Basic).

Volunteer & Social works

Mar. 2024   As a Mastercard Foundation Scholar, actively participated in community service initiatives, dedicating hours to social work and volunteering efforts. Engaged in educational tutoring at Muizenberg High, South Africa.

Mar. 2024   Volunteered at Siyakhula, an event by AIMS, to boost Africa's mathematical sciences.

Dec. 2022   Participated as a volunteer at CIMPA (Algebra Winter School), facilitating academic exchanges and supporting the organization of workshops focused on advancing algebraic knowledge and research collaboration among international scholars.

Personal information

Date of birth: 22 Dec. 1997

Citizenship: Egyptian

References

Dr Karin-Therese Howell   e-mail: howell@aims.ac.za

Academic Director, African Institute for Mathematical Science, South Africa.

Prof. Susan Eldeken   e-mail:Sfdeken@science.helwan.edu.eg

Mathematics Department, Helwan University, Cairo, Egypt.