

AHMED H. ABDELRAZIK

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EDUCATION

Eberhard Karls Universität Tübingen, Germany <i>Ph.D. in Computational Neuroscience</i>	<i>Oct. 2025 – Present</i>
Eberhard Karls Universität Tübingen, Germany <i>M.Sc. in Computational Neuroscience</i>	<i>Oct. 2023 – Sept. 2025</i> CGPA: 3.7/4.00
Zewail City University of Science and Technology, Egypt <i>B.Sc. in Aerospace Engineering</i>	<i>Sept. 2017 – Jul. 2022</i> CGPA: 3.55/4.00

EXPERIENCE

Master's Thesis, under the supervision of Prof. Peter Dayan <i>Investigating the Spectrum of Information Gathering in OCD during Sequential Decision-Making</i>	<i>Dec. 2024 – Oct. 2025</i>
- Investigated the underlying cognitive mechanisms of indecisiveness in obsessive-compulsive disorder (OCD). - Modeled decision-making in OCD using the Partially Observable Markov Decision Process (POMDP) to capture the underlying mechanism for indecisiveness. - Fitted the model to reproduce the empirical data.	
Teaching Assistant, Neural Dynamics (Graduate Training Center, Tübingen)	<i>Sept. 2024 – Present</i>
- Guided students through tutorials, problem sets, and practical coding exercises. - Assisted in course delivery and graded assignments.	
Research Assistant, Giese Lab for Computational Sensomotorics <i>Stabilizing Neural Fields: Comparative Analysis of Techniques and Contraction Theory in Hilbert Spaces</i>	<i>Sept. 2024 – Dec. 2024</i>
- Investigated contraction theory for continuum models of neural fields. - Analyzed stability conditions for interconnected recurrent neural networks (RNNs).	
Systems Biologist and Protein Engineering Researcher, Proteinea	<i>Sept. 2022 – Jan. 2024</i>
- Developed protein thermal stability prediction pipelines using biophysical modeling. - Designed and led learning programs in biophysics for team members. - Contributed to rational antibody design projects.	
Teaching Assistant, Zewail City University of Science and Technology	<i>Sept. 2022 – Jan. 2023</i>
Supported instruction in Systems Biology and Nonlinear Control courses.	
Research Assistant, Brain Dynamics Lab (Dynamics & Network Control Theory)	<i>Jul. 2022 – Feb. 2023</i>
- Developed an open-source large-scale network package for brain dynamics (Kuramoto model). https://kuramotonetworkspackage.readthedocs.io - Modeled large-scale brain activity and analyzed structural vs. functional connectivity.	
Research Intern, Brain Dynamics Lab, University of Manchester	<i>Aug. 2021 – Nov. 2021</i>
- Performed stability analysis for the Wilson–Cowan model. - Explored links between model parameters and oscillatory dynamics.	

SUMMER SCHOOLS & ADDITIONAL TRAINING

Mathematical Methods in Computational Neuroscience (Kavli Institute, Norway)	<i>July 2025</i>
Covered information theory, statistical mechanics, network dynamics, and dimensionality reduction.	

- Presented a poster and gave an oral presentation on my research.

Latin American Summer School in Computational Neuroscience (LACONEU)

Jan. 2023

- Fully funded scholarship by the Abdus Salam International Centre for Theoretical Physics (ICTP).
- Participated in lectures and hands-on projects at Universidad de Valparaíso, Chile.

PROJECTS AND PUBLICATIONS

Conference Paper: “Beyond global synchrony: Equivalence between Kuramoto oscillators and Wilson–Cowan model for large-scale brain networks.”

<https://doi.org/10.1117/12.2670120>

Nov. 2022 – Mar. 2023

- Presented at the 18th International Symposium on Medical Information Processing and Analysis (SIPAIM).

Undergraduate Thesis: “Dynamical Analysis and Large-scale Network Implementation of the Kuramoto Model to Match EEG Data from Schizophrenic Patients.”

Nov. 2021 – Jul. 2022

- Implemented large-scale time-delayed Kuramoto networks under rhythmic stimulation.
- Related structural brain networks to functional connectivity using network analysis.
- Analyzed bifurcation dynamics of coupled Wilson–Cowan populations.

ACHIEVEMENTS AND AWARDS

- International Max Planck Research School Scholarship for the 5-year MSc/PhD program. Oct. 2023 – Present
- ICTP Fully Funded Scholarship for LACONEU Summer School. Jan. 2023
- Full Tuition and Fees Scholarship, Zewail University. Sept. 2017 – Jun. 2022
- Provost’s Honor Roll, Cum Laude.
- Recognition for Service to Zewail City Community.

RELEVANT COURSES

- Theoretical Neuroscience, Nonlinear Control, Neurophysiology
- Deep Learning, Differential Geometry, Systems Biology
- Linear/Nonlinear Programming, Biological Physics, Data Structures & Algorithms

SKILLS

Programming:	Python, C/C++, MATLAB
ML & Data Science:	PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas
Software & Tools:	Simulink, SOLIDWORKS, Cytoscape, PyMOL
Languages:	Arabic (Native), English (Fluent), German (Intermediate)
Hobbies:	Tennis, Hiking, Running, Calisthenics

EXTRA-CURRICULAR ACTIVITIES

- TEDx UST Zewail City, Head of Public Relations** 2018 – 2019
 - Led and trained PR and fundraising teams; coordinated speaker outreach and event logistics.
- IEEE Zewail City, Head of PR and Fundraising** 2017 – 2018
 - Managed a 12-member PR team; raised 300,000 EGP to support events with 400+ attendees.
- Egyptian Diplomatic Project, HR Development Committee Member** 2016 – 2017
 - Conducted interviews, performance appraisals, and participant support for 300+ individuals.