Furkan Eşref Yazıcı

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Personal Profile

As an interdisciplinary researcher, my focus lies in the field of data science and deep learning. I have extensive experience conducting research across various domains and topics. Additionally, I have served as an event organizer, demonstrating my leadership and teamwork capabilities, along with strong social skills.

Education

2018 - 2025 **Middle East Technical University (METU)**, *Physics*,
Bachelor of Science,
Ankara, Turkey.

Final Project: "Physics Informed Neural Networks on Quantum Computers"
Extra Courses: CENG 501: Deep Learning
PHYS 409: Condensed Matter
PHYS 312: Elementary Solid State
PHYS 495: Group Theory
PHYS 444: Computational Physics II

2014-2018 **ENKA Technical High School**, *Industrial Automation*,
Kocaeli, Turkey.

Technical Skills: PLC Programming, Solidworks, PIC Coding, Circuit Design with Proteus, Pneumatics and Hydraulics Systems

Research Experience

Aug 2024 – Present **Undergraduate Research Assistant**, ***OBM Research***,
Engaged in research on Quantum Neural Networks (QNNs), applying them to a range of practical scenarios, including machine learning and optimization tasks..

Nov 2021– Sep 2023 **Undergraduate Research Assistant**, ***Simply Complex Lab***,
The laboratory's research area centers on intricate, far-from-equilibrium phenomena. As an integral component of broader collaborative investigations, I contributed to the cross-correlation analysis of hyperuniformity dynamics within a colloidal system, employing principles from the domain of fluid dynamics. Presently, my research entails an examination of causal network analysis concerning the emergence of hyperuniformity within this system. I am actively engaged in the development of Python code to assess causality resulting from interparticle collisions. Supervisor: Dr. Serim İlday.

Feb 2020 – Jun 2022 **Undergraduate Research Assistant**, ***IVMER The Research and Application***,
Contributed to Quantum Convolutional Neural Networks (QCNN) for image detection utilizing various quantum gate algorithms. Also, applied Quantum Machine Learning techniques to address the 'Travelling Salesman' problem within a research team. Supervisor: Prof. M. Bilge Demirköz .

Jobs & Internships Experiences

May 2024 – Present **Qavis**, ***Quantum Software Developer***.
Description: The aim of Qavis is to develop advanced logistics algorithms that leverage Quantum Computing to find optimal paths and routes. These algorithms are designed to enhance efficiency in logistics operations by solving complex optimization problems more quickly and accurately than traditional methods.

Sep 2021 – Jan 2023 **QTurkey**, ***Outreach Coordinator***.
Description: - The aim of the QTurkey (Quantum Turkey) community is to spread quantum technologies and raise awareness through events held in Turkey.
- As the Outreach Team, our aim is to ensure the growth of the QTurkey community, establish domestic and international collaborations, and to keep the QTurkey family active by organizing new events.

Jul 2021 – Aug 2021 **QWorld**, *Internship*.
Description: The project is included the website and classification of all courses and related stuffs. The website is: qmap.qworld.net.

Summer 2017 **ALTINAY Technology Group**, *Internship*,
Industrial Automation Technician,
Tuzla, Istanbul.

Summer 2016 **KANCA**, *Internship*,
Electrical Maintenance Technician,
Tuzla, Istanbul.

Prominent Courses

IBM Data Science Professional Certificate,
I completed the IBM Data Science Professional Certificate, a rigorous program covering data science fundamentals, machine learning, and practical project work. This certificate demonstrates my proficiency in data analysis, Python programming, and the use of industry-standard tools and libraries. It showcases my readiness for data science roles and highlights my commitment to ongoing skill development..

Google Data Analytics Professional Certificate,
I acquired key skills in data cleaning, analysis, and visualization using spreadsheets, SQL, R programming, and Tableau. I learned to organize and analyze data, create visualizations, and present findings effectively. Developed expertise in spreadsheet usage, data ethics, problem-solving, and decision-making. Proficient in SQL querying, Tableau software, R programming, and creating job portfolios with case studies..

CENG 501: Deep Learning,
A graduate-level course covering representation learning, CNNs, RNNs, autoencoders, and applications to pattern recognition, speech recognition, and natural language processing. Topics include deep hierarchies and learning mechanisms in humans, artificial neural networks, representation in terms of basis functions, independent component analysis, sparse representations, convolutional neural networks, restricted Boltzmann machines, and deep belief networks..

PHYS 312: Elementary Solid State,
We learned how to theoretically model crystal structures and understand the movements of photons within these structures. Through theoretical modeling, we gained insight into how these movements relate to the lattice models, enabling us to interpret and utilize them effectively..

PHYS 409: Condensed Matter I,
I acquired the ability to theoretically model electron transfer within crystal structures and explore them using electron Bloch structures by modeling lattices, which are the fundamental building blocks. Moreover, I gained theoretical insight into how electrons establish magnetic structures within solid-state materials, along with the mathematical and physical modeling techniques involved in this process..

PHYS 444: Computational Physics II,
On Numeric Methods and their usage in Physics Monte Carlo Method.

Skills

Languages	Turkish (Native), English (Advanced, C1), German (Elementary, A2)
Programming Languages	Python, MATLAB, R, Rust
Database Languages	MySQL, SQL
Knowledge	Data Science, Web Scrapping, ETL, Data Analysis, Machine Learning, Quantum Computing
Dashboards	Tableau, Dash, Power BI
Databases	BigQuery
Frameworks	PyTorch, Qiskit, Pennylane, Scrapy, Spacy, Ocean (D-Wave), FastAPI, Django, Selenium
Web Design	HTML, CSS, JavaScript, Astro, React
Design	Solidworks, GIMP, Canva, StableDiffusion, Adobe Firefly

Service and outreach

September 2022	**QTurkey, Quantum Event Series (Hackathon, Seminars, and Education)**, Event Organizer
April 2022	**TÜBİTAK & QTurkey, 14 April World Quantum Day**, Event Organizer
Sep 2021 - Feb 2022	**METU**, Laboratory Assistant, **Description:** Computational Lab Assistant in Dr. Barış Malcıoğlu's course of "PHYS 437: Practical Quantum Computing for Scientist"
Feb 2021	**QSB Quantum Computing Bronze Workshop**, *Mentor and Instructor*.

Additional Courses

Online	Web3 and NEAR Pathway by Patika.dev (April 2022), Deep Learning by Neuromatch (August 2021), Computational Neuroscience by Neuromatch (July 2021), Qiskit Summer School Quantum Machine Learning by IBM (July 2021), Introduction to Quantum Computing Course by IBM (May 2021)

Other Interests

Photo-art, Reading/Writing Poems, Reading Books, Sketching , Riding a Bike, Doing Martial Arts.