Faris Ibrahim

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Education

Delta Higher Institute of Engineering and Technology (DHIET) **Mansoura, Egypt**
Bachelor of Engineering in Electronics and Communication — GPA: 3.2/4.0 *Sep. 2021 – Jun. 2026 (Expected)*

- **Concentration**: Machine Learning, Computer Vision.
- **Relevant Coursework**: Computer Programming, Computer Skills, Signals Analysis, Analysis & Research Skills, Microprocessors & Applications, Statistics & Probability Theory, Mathematics: (1) Calculus I, (2) Calculus II, (3) Linear Algebra, (4) Discrete Mathematics, Project Management, Technical Writing, Communication & Presentation Skills.
- **Independent Study**: Deep Learning for Computer Vision, Machine Learning, Data Analysis, Image Processing, Data Structures & Algorithms, Object Oriented Programming, C/C++ Programming, Writing in the Sciences.

Research Experience

State University of New York at Buffalo **Remote — Buffalo, NY, USA**
Undergraduate Researcher *– Supervisor: Prof. Junsong Yuan* *Oct. 2024 – Present*

- Developing novel algorithms for human-object interaction detection to improve the localization and recognition of human-object pairs, addressing limitations in existing models for few- and zero-shot learning. Conducting ongoing experiments with promising results, particularly in zero-shot learning scenarios.
- Wrote an article explaining the QPIC model, a cornerstone for state-of-the-art HOI detection models. The article, titled **Understanding QPIC: Query-Based Pairwise Human-Object Interaction Detection with Transformers**, aims to simplify and clarify the model's mechanics. The article was published on Medium [1].

Zewail City for Science, Technology, and Innovation **Remote — Zewail City, Egypt**
Research Lead *– Applied Machine Learning Lab* *Sep. 2024 – Present*

- Leading the **DermVision** project under the supervision of esteemed professors at Zewail City of Science and Technology, directing a multidisciplinary team to develop convolutional neural networks (CNNs) for skin cancer diagnosis. Addressing data imbalance to enhance diagnostic accuracy for underrepresented conditions in medical datasets.

Delta Higher Institute of Engineering and Technology (DHIET) **Mansoura, Egypt**
Undergraduate Research Assistant *– Supervisors: Prof. El-Sayed M. El-Kenawy* *Jan. 2023 – Aug. 2024*

- Collaborated with Prof. Marwa M. Eid at DHIET, Dr. Nima Khodadadi at the University of Miami, FL, USA, and the Computer Science and Intelligent Systems Research Center, VA, USA, on various research projects.
- Created a computer vision-based pothole detection system implemented in a RC car achieving 92.15% accuracy [2].
- Optimized student performance prediction using the Greylag Goose Optimizer, reducing the MSE by 50% [3].
- Enhanced CNN models for traffic detection using the Waterwheel Plant Algorithm, achieving 97.28% accuracy [4].
- Applied deep learning architectures to predict traffic patterns for smart city development, achieving 93.18% accuracy [5].

Note: *I use the name "Faris H. Rizk" as my public identifier for research publications. My full name is Faris Hamdi Rizk Elsayed Ibrahim.*

Technical Articles

[1] **F. H. Rizk**, "Understanding QPIC: Query-Based Pairwise Human-Object Interaction Detection with Transformers," *Medium*, 2024. Available at: Article Link.

Publications

[2] M. E. S. Abdelmalak, N. Khodadadi, A. M. Zaki, M. M. Eid, **F. H. Rizk**, et al., "Pothole Detection in Asphalt Roads: A Comprehensive Approach for Enhanced Road Maintenance and Safety with AlexNet Model," in *Proc. 2024 Int. Telecommun. Conf. (ITC-Egypt)*, 2024, pp. 269–274. doi:10.1109/ITC-Egypt61547.2024.10620566.

[3] **F. H. Rizk**, M. E. Mohamed, B. Sameh, A. M. Zaki, M. M. Eid, & E.-S. M. El-kenawy, "Enhancing Student Performance Prediction with Greylag Goose Optimization Algorithm," in *Proc. 2024 Int. Telecommun. Conf. (ITC-Egypt)*, 2024, pp. 32–37. doi:10.1109/ITC-Egypt61547.2024.10620568.

[4] **F. H. Rizk**, S. Arkhstan, A. M. Zaki, M. A. Kandel, & S. K. Towfek, "Integrated CNN and Waterwheel Plant Algorithm for Enhanced Global Traffic Detection," in *Journal of Artificial Intelligence and Metaheuristics*, vol. 6, no. 2, pp. 36–45, 2023. doi:10.54216/JAIM.060204.

[5] M. A. Kandel, **F. H. Rizk**, L. Hongou, A. M. Zaki, H. Khan, & E.-S. M. El-Kenawy, "Evaluating the Efficacy of Deep Learning Architectures in Predicting Traffic Patterns for Smart City Development," in *Journal of Artificial Intelligence and Metaheuristics*, vol. 6, no. 2, pp. 26–35, 2023. doi:10.54216/JAIM.060203.

Skills

Programming Languages: Python (proficient), C/C++ (familiar).

Frameworks & Libraries: TensorFlow/Keras, PyTorch, Scikit-learn, OpenCV, NumPy, Pandas, Matplotlib.

Tools: Jupyter Notebooks, Google Colab, Git/GitHub, Linux/Unix, LaTeX.

Soft Skills: Leadership, Teamwork, Project Management, Communication.

Languages: Arabic (Native), English (Fluent).

Leadership and Extracurricular Activities

Google Developer Student Club (GDSC) at DHIET **Mansoura, Egypt**

Graphic Design Head, *Certificate* *Oct. 2023 – Jun. 2024*

- Led a team of 5 designers, increasing "DevFest" attendance by 30% through impactful promotional campaigns.
- Managed the club's visual identity across digital and print platforms, growing followers by 25%.
- Enhanced leadership and project management skills by coordinating team efforts and meeting deadlines.

Google Developer Student Club (GDSC) at DHIET **Mansoura, Egypt**

Graphic Designer, *Certificate* *Jan. 2023 – Oct. 2023*

- Designed promotional materials for events, contributing to a 20% increase in social media engagement.
- Collaborated with cross-functional teams to ensure cohesive branding and messaging.

IHOW Organization **Mansoura, Egypt**

Human Resources Member *Oct. 2022 – Jan. 2023*

- Led recruitment and onboarding for 10+ new members, improving team diversity.
- Facilitated team-building activities to enhance communication and productivity.

Competitions and Awards

DevFest Mansoura Hackathon **Mansoura University, Egypt**

2nd Place *(Out of 25 teams)* *Dec. 2023*

- Developed a data-driven platform to connect skilled laborers with clients, reducing unemployment and poverty in Egyptian society.
- Built predictive models using machine learning to match laborers and clients efficiently.
- Collaborated with design and development teams, contributing to the project's technical and user experience elements.