




# Mohamed Kamel


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 Upwork Profile

## Education

### Virginia Commonwealth University (VCU)

PH.D. IN COMPUTER SCIENCE

- GPA: 4.0/4.0

Richmond, VA, United States

2024 – Present

### Nile University (NU)

M.Sc. IN INFORMATICS

- GPA: 3.97/4.0

Cairo, Egypt

2023 – 2024

### Ahram Canadian University (ACU)

B.Sc. IN COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

- GPA: 3.9/4.0, Second of the class

Cairo, Egypt

2018 – 2022

## Skills

### Programming

Expert: Java, Python, C++, JavaScript, PHP, HTML, CSS | Familiar: Dart, Kotlin

### Backend Dev

FastAPI, Docker, REST APIs

### ML & DL

Reinforcement Learning, Self-Supervised Learning, Transfer Learning

### Vision

Computer Vision, ViT, BEiT, Semantic Segmentation, Semantic Communication, U-Net, GANs, Diffusion Models, DINOv2

### LLMs

Prompt Engineering, LLM Poisoning, LoRA, TinyLLaMA, GPT, Claude, NER

### Databases

Expert: MySQL, MongoDB | Proficient: Firebase

### Frameworks

Expert: JavaFX, Swing, Bootstrap | Proficient: JSON, Flutter | Familiar: Kafka, Microservices

### Languages

Arabic: Native | English: C1 | German: A1

## Publications

### BeatFlow: ECG Reconstruction from Indirect Wearable Signals using Conditional Rectified Flow

CONFERENCE PUBLICATION

NeurIPS 2026 (In progress)

manuscript prepared for submission to

NeurIPS, 2026

### Learning-Based ECG Denoising using Conditional Rectified Flow

CONFERENCE PUBLICATION

Computing in Cardiology (CinC)

2026 (Under Review)

Under Review, 2026

### Proactive Semantic Deception Against Unauthorized Data Harvesting

CONFERENCE PUBLICATION

ICML2026 (Under Review)

Under Review, 2026

### URGE: Urgency-Aware Energy-Efficient UAV Mobility via Hybrid Deep Reinforcement Learning

CONFERENCE PUBLICATION

International Conference on Smart

Mobility (SM) 2026

Accepted, 2026

### Development of an AI-Enabled Remote Loneliness Detection System Using Speech and Behavioral Data from Smart Speakers and IoT Sensors

JOURNAL PUBLICATION

Assessment (SAGE Journals) –

Scopus Q1 – Special Issue on AI in

Psychological Assessment

Under Review, 2025

### Attention-Driven Reinforcement Learning to Optimize Packet Retransmission in Semantic Communication

CONFERENCE PUBLICATION

IEEE GLOBECOM 2025

Accepted, 2025

## Academic Service

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### Assessment

REVIEWER

2026

### International Conference on Smart Mobility (SM)

REVIEWER

2026

## Research Talks

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### From Wearable Signals to Clinical ECG: Toward Continuous Cardiac Monitoring

Department of Computer Science  
Seminar, Virginia Commonwealth

University

INVITED SPEAKER

March 20, 2026

## Honors, Awards & Certifications

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### Badge issued by Virginia Commonwealth University (VCU)

LEADERSHIP FOUNDATIONS FOR GRADUATE STUDENTS

Credly

Oct 2025

### Credential from IBM Z Day on AI and Data

IBM Z DAY 2025 SE – AI &amp; DATA

IBM

Apr 2025

### Credential from MongoDB

MONGODB CRUD OPERATIONS IN PYTHON

MongoDB University

2025

### Semi-Finalist, Dell Technologies Envision the Future

GRADUATION PROJECT COMPETITION (MIDDLE EAST, RUSSIA, AFRICA, TURKEY)

Online

2025

### Certificate, Software Design and Architecture Specialization University of Alberta

COVERED: OBJECT-ORIENTED DESIGN, DESIGN PATTERNS, SOFTWARE ARCHITECTURE, SERVICE-ORIENTED ARCHITECTURE

Online

2021

### First Place, ACU Problem Solving Competition

HACKEREARTH COLLEGE CHALLENGE

Leaderboard

2020

### Academic Excellence Award

AWARDED MULTIPLE TIMES FOR TOP ACADEMIC PERFORMANCE

Ahram Canadian University

2019 – 2022

## Experience

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### Virginia Commonwealth University (VCU)

RESEARCH ASSISTANT

United States

Aug. 2025 – Present

- Contributing to the NIH-funded *HomePAL* project on AI-enabled ambient health monitoring ([NIH R01AG072611](#), [Project Link](#)).
- Responsible for sensor setup, data acquisition scripts, signal analysis, and AI-based behavioral anomaly detection
- Contributing to the SARE-funded food waste tracking and diversion project ([SARE FLW24-004](#), [Project Link](#)).

### VCU + Bank of America – Special Olympics

SOFTWARE ENGINEER INTERN (PART-TIME)

United States

May 2025 – Aug 2025

- lead the backend development of a software application supporting Special Olympics.
- Involved in software design, API development, testing, and integration with frontend components.
- Tech Used: Python, FastAPI, MongoDB, Azure, Figma, React, TypeScript, HTML, CSS, JavaScript, Git

## Virginia Commonwealth University (VCU)

GRADUATE ASSISTANT (FULL-TIME)

- Held weekly office hours, and provided academic support for foundational CS courses.
- Graded assignments and assisted in curriculum delivery for undergraduate students.

United States  
Jan. 2024 – May 2025

## Nile University (NU)

TEACHING ASSISTANT (FULL-TIME)

- Assisted in teaching AI, CS major, and programming courses.
- Provided lab support and one-on-one mentoring for students.

Egypt  
Feb. 2023 – Jan. 2024

## Ahram Canadian University (ACU)

TEACHING ASSISTANT (FULL-TIME)

- Taught AI-related and core programming subjects.
- Supported student learning and practical lab implementation.

Egypt  
Oct. 2022 – Feb. 2023

## LÀCRIMA Dairy Industrial Ltd

SOFTWARE DEVELOPER (CONTRACT)

- Developed an internal desktop system for electronic file archiving and communication ([Demo Video](#)).
- Designed customer-facing and employee mobile applications to improve service interaction. ([Android](#) | [iOS](#))
- Tech Used: Java, JavaFX, AWS, MySQL, Flutter, Firebase, Kotlin

Remote - Jordan  
Jan. 2022 – Jul. 2023

## Order GO

FULL STACK DEVELOPER (FULL-TIME)

- Built the company's public website and improved digital presence.
- Developed the ROS App for streamlining kitchen order management.
- Tech Used: Java, JavaFX, Kotlin, HTML, CSS, JavaScript, Bootstrap, PHP, Firebase, Git

Remote - United Kingdom  
Apr. 2021 – Oct. 2021

## Upwork

TOP-RATED FREELANCER

- Completed over 65 freelance software projects with a 98% job success rate.
- Delivered services across AI, web, mobile, and desktop platforms for international clients.

Remote  
Apr. 2019 – Oct. 2023

## Volunteering Activities

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### Ahram Canadian University (ACU)

VOLUNTEER UNDERGRADUATE TEACHING ASSISTANT

- Supported courses: Linear Algebra, Fundamentals of Programming I, Event Driven, and Data Structures.
- Uploaded educational videos to YouTube; one video received nearly 50,000 views with excellent feedback ([Video Link](#)).

Egypt  
2018 – 2022

### EXCEPTION Student Committee

MEMBER AND ACADEMIC INSTRUCTOR

- First academic and technical-only content committee in ACU CS.
- Conducted workshops in multiple areas including CS fundamentals, programming, Java (OOP), and Web development.

Egypt  
2018 – 2022

### ACU CPC Community (ACM)

MENTOR

- Mentored peers in programming competitions and problem-solving practices.

Egypt  
2020 – 2022

### ACU CS Student Union

SCIENTIFIC COMMITTEE MEMBER

- Supported the academic initiatives and contributed to scientific activities organized by the student union.

Egypt  
2020 – 2021

### ACU DSC Community (Google Student Developer)

MEMBER

- Participated in Google Developer Student Club activities, workshops, and peer-learning sessions.

Egypt  
2020 – 2021

## Selected Projects

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### ENERGY-EFFICIENT UAV DEPLOYMENT VIA REINFORCEMENT LEARNING FOR DISASTER RESPONSE

- Developed a UAV deployment framework prioritizing disaster tasks with Deep Q-Networks (DQN).
- Integrated collaborative drone behavior to maximize coverage and minimize energy use.
- Enhanced efficiency of UAV interventions through dynamic prioritization.
- Technologies: Reinforcement Learning, DQN, UAVs, Swarm Intelligence, Python.

2024

<p><b>NAVIGATING THE RETINAL MAZE: IR IMAGING FOR RETINAL EXPLORATION</b></p> <ul style="list-style-type: none"> <li>Developed CrackRAVIR, a deep learning model for segmentation of retinal arteries and veins using IR imaging.</li> <li>Utilized Residual Attention UNET to improve segmentation accuracy and vascular width estimation.</li> <li>Improved glaucoma and AMD detection through detailed vasculature analysis.</li> <li>Technologies: Deep Learning, Residual Attention UNET, Semantic Segmentation, Python, IR Imaging.</li> </ul>	2024
<p><b>GRAPH NEURAL NETWORKS FOR MOVIE RECOMMENDATION SYSTEMS</b></p> <ul style="list-style-type: none"> <li>Developed a GraphSAGE-based recommendation system for movies using bipartite graphs of users/movies.</li> <li>Addressed cold start and scalability issues, compared with collaborative filtering and LightGCN.</li> <li>Technologies: Python, GraphSAGE, PyTorch Geometric, Collaborative Filtering, LightGCN.</li> </ul>	2024
<p><b>EVIDENCE DETECTION IN CLOUD FORENSICS</b></p> <ul style="list-style-type: none"> <li>Designed a system to detect evidence of cyber threats and anomalies in cloud environments.</li> <li>Utilized Gradient Boosting Machines, Sequential NN, and RNN to improve forensic accuracy and speed.</li> <li>Technologies: Python, GBM, RNN, Enhanced MLP.</li> </ul>	2023
<p><b>AI DISEASE DIAGNOSTIC SYSTEM USING DEEP LEARNING AND IMAGE PROCESSING</b></p> <ul style="list-style-type: none"> <li>Developed an application for early diagnosis of diseases using 50,000+ images from Fitzpatrick17k, SD198, and ISIC 2019 datasets.</li> <li>Achieved 85% accuracy using LAMB optimizer and advanced image augmentation techniques.</li> <li>Built with clean architecture and MVI framework.</li> <li>Technologies: Machine Learning, Deep Learning, Python, Kotlin, Vision Transformers, Neural Networks, MVI.</li> <li><a href="#">Demo Preview</a>   <a href="#">Paper</a></li> </ul>	2022
<p><b>SELF-DRIVING CAR WITH OBJECT DETECTION (CNN, RL, YOLOv3)</b></p> <ul style="list-style-type: none"> <li>Developed a self-driving car model capable of detecting traffic signals and adjusting speed dynamically.</li> <li>Technologies: Computer Vision, Carla Simulator, CNNs, Reinforcement Learning, YOLOv3, Python.</li> </ul>	2022
<p><b>EXTENDING FASTPITCH WITH EMOTIONAL AWARENESS</b></p> <ul style="list-style-type: none"> <li>Enhanced Fastpitch for emotional speech output using a modified Conformer architecture.</li> <li>Trained with emotional labels and perceptual loss for expressive speech synthesis.</li> <li>Technologies: Python, Conformer, Fastpitch, DeepVoice3, Mel Spectrogram.</li> </ul>	2021
<p><b>EARLY-STAGE DIABETES RISK PREDICTION CLASSIFIER</b></p> <ul style="list-style-type: none"> <li>Developed a binary classifier for diabetes risk prediction using tabular data.</li> <li>Technologies: Python, FastAI, Machine Learning.</li> <li><a href="#">GitHub Repo</a></li> </ul>	2021
<p><b>WHEAT SEEDS CLASSIFICATION</b></p> <ul style="list-style-type: none"> <li>Classified wheat seeds using multiple machine learning algorithms, including Naïve Bayes, Random Forest, SVM, Decision Tree, and K-Nearest Neighbors.</li> <li>Compared performance across models to determine the most accurate classifier.</li> <li>Technologies: Python, Naïve Bayes, Random Forest, SVM, Decision Tree, KNN.</li> <li><a href="#">GitHub Repo</a></li> </ul>	2021
<p><b>ACCOUNT MANAGEMENT SYSTEM</b></p> <ul style="list-style-type: none"> <li>Automated accounting tasks, including employee hour tracking, payroll generation, and bonus/deduction calculations.</li> <li>Technologies: Java, JavaFX, MySQL.</li> </ul>	2020
<p><b>HOTEL RESERVATION SYSTEM</b></p> <ul style="list-style-type: none"> <li>Developed a Java desktop application for hotel receptionists to manage room reservations, services, and guest details, including payment tracking.</li> <li>Simplified hotel operations by automating room management and customer billing.</li> <li>Technologies: Java, JavaFX, MySQL.</li> </ul>	2020
<p><b>TAZKARTI FOOTBALL MATCH BOOKING SYSTEM</b></p> <ul style="list-style-type: none"> <li>Developed a user-friendly system to register, select matches, and book tickets online.</li> <li>Technologies: Java, JavaFX, MySQL.</li> </ul>	2019
<p><b>OTHER PROJECTS (SELECTION)</b></p> <ul style="list-style-type: none"> <li>E-Learning School Website – HTML, CSS, JS, PHP, SQL. <a href="#">Demo</a></li> <li>Hospital Management System – Java, JavaFX, MySQL. <a href="#">Demo</a></li> <li>Inventory Management System – Java, JavaFX. <a href="#">Demo</a></li> <li>Learn Tech Website – HTML, CSS, JS, Bootstrap. <a href="#">Preview</a></li> <li>Restaurant Website – HTML, CSS, JS. <a href="#">Demo</a></li> <li>Grow Social App – Java, JavaFX, MySQL. <a href="#">Demo</a></li> <li>Games: Scotland Yard (<a href="#">Demo</a>)   Snake 2D (<a href="#">Demo</a>)   Memory (<a href="#">Demo</a>)   Kids Games (Java, JavaFX, MySQL)   Hangman (HTML, CSS, JavaScript)</li> </ul>	

## Key Skills & Competencies

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- Fast Learner of New Technologies and Programming Languages

- Excellent Communication and Team Collaboration
- Strong Analytical and Problem-Solving Skills
- Performs Well Under Pressure and Shares Knowledge Effectively

## Additional Information

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### Hobbies

Reading research papers on AI and Computer Vision, participating in coding challenges (e.g., Hackerrank, LeetCode), contributing to open-source projects, attending tech meetups and AI webinars, gym, football, and classical music

### Social Activities

Helping people and sharing knowledge

## References

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Available upon request.