

Amany Asaad AbdElsamea Ahmed

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Research Profile

Computer science researcher and Teaching Assistant with research experience in computer vision, biometric security, deep learning, and presentation attack detection. My research focuses on developing robust deep learning frameworks for biometric recognition systems, particularly ear presentation attack detection using hybrid CNN and image quality assessment techniques. I am interested in pursuing advanced research in artificial intelligence, computer vision, cybersecurity, and trustworthy biometric systems.

Academic Position

Teaching Assistant

June 2023–Present

Faculty of Computers and Information, Qena University, Egypt

Education

Master of Science in Electrical Engineering

2026

Faculty of Engineering, Qena University, Egypt

Thesis Title:

Spoofing Attacks Detection for Biometric Recognition Systems

- Developed quality-aware deep learning frameworks for ear Presentation Attack Detection (PAD).
- Investigated hybrid CNN–Image Quality Assessment (IQA) models using adaptive FiLM-based gated fusion.
- Evaluated multi-class spoofing attacks including noise, blur, printed, and AI-generated attacks.
- Conducted experiments using AMI and WPUTEDB ear biometric datasets.

Bachelor of Engineering in Systems and Computer Engineering

2022

Faculty of Engineering, Al-Azhar University, Egypt

Grade: **Excellent**

Graduation Project: LXP Platform (Learning Experience Platform)

Research Experience

- Conducted research in biometric security and ear Presentation Attack Detection using deep learning and image quality analysis.

- Developed hybrid CNN-IQA architectures combining deep visual representations with handcrafted image quality descriptors.
- Designed and evaluated adaptive FiLM-based gated fusion models using MobileNetV3, ResNet50, and DenseNet121 backbones.
- Developed multi-class spoofing protocols involving real, noise-based, blur-based, printed, and AI-generated samples.
- Performed model evaluation using Accuracy, Macro-F1, AUC, EER, ACER, ROC curves, and confusion matrices.
- Conducted experimental analysis across datasets with different levels of difficulty to investigate model robustness.
- Experienced in literature review, experimental design, deep learning model development, result analysis, and academic manuscript preparation.

Publications and Research Output

1. H. Alshazly, A. Asaad, H. A. Atallah, V. Kumar, and A. Namoun, "HCIQ: A Hybrid CNN and Image Quality Assessment Framework for Robust Ear Presentation Attack Detection," *Expert Systems with Applications*, vol. 324, 132523, 2026.
2. A. Asaad, H. Alshazly, and H. A. Atallah, "Quality-Aware Deep Learning Framework for Ear Biometric PAD," *5th International Conference on Basic Sciences & Sustainable Development*, Qena, Egypt, January 2026.

Professional Experience

Full Stack Developer

Al-Rwoad Company

- Developed and maintained web-based applications.
- Worked on frontend and backend development tasks.

Online Programming Instructor for Children

Online Educational Platforms

- Delivered online programming courses for children.
- Designed simplified and interactive programming content.
- Introduced fundamental programming and problem-solving concepts.

Technical and Research Skills

- **Programming Languages:** Python, C++, JavaScript, Node.js
- **Artificial Intelligence:** Machine Learning, Deep Learning
- **Computer Vision:** Image Processing, Image Classification, Feature Extraction
- **Deep Learning Models:** CNNs, MobileNetV3, ResNet50, DenseNet121
- **Research Areas:** Biometric Security, Presentation Attack Detection, Image Quality Assessment

- **Research Skills:** Literature Review, Experimental Design, Model Evaluation, Academic Writing, Result Analysis
- **Software Development:** Web Development and Software Development Fundamentals

Research Interests

- Computer Vision
- Deep Learning
- Biometric Security
- Presentation Attack Detection
- Artificial Intelligence
- Image Processing and Image Quality Assessment
- Cybersecurity
- Robust and Trustworthy AI

Training and Workshops

- Scientific Research Capacity Development Programs
- Organization of Scientific Conferences
- Research Team Management

Languages

- Arabic: Native
- English: Very Good