

# Mohannad Abdelkarim

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## EDUCATION

### Tanta University

Bachelor of Science in Computer Engineering and Automatic Control (**GPA: 3.48/4.0**)

Tanta, Egypt

Aug. 2022 – Jul. 2027

## EXPERIENCE

### Tanta University

Undergraduate Research Assistant

Apr. 2025 – Present

Tanta, Egypt

- Co-authoring paper on using ML to simulate optimal feature sets in photothermal nanotechnology experiments
- Improved AutoML pipelines by adding regression support to BigFeat, an automated feature engineering tool, enabling broader model applicability
- Contributed to research paper on BigFeat + AutoML and model explainability (N-BaIoT dataset); acknowledged for the experimental phase work

### iNNOTECH

Software Security Engineer

Jul. 2023 – Jun. 2025

Jan. 2025 – Jun. 2025

- Secured client-server communication by implementing hybrid encryption (RSA + AES-256) following OWASP guidelines
- Led R&D efforts to standardize cryptographic practices, improving data integrity and compliance in enterprise apps

Software Engineer

Oct. 2023 – Jan. 2025

- Led development of ERP modules using ASP.NET, Blazor, .NET MAUI, and Web API across 10+ projects
- Improved large dataset handling speed by 97% by optimizing SQL queries and indexing strategies
- Resolved over 50 bugs, increasing system reliability and reducing support tickets
- Mentored over 100 trainees in DSA, SWE, and .NET stack through accessible presentations

Software Engineering Intern

Jul. 2023 – Oct. 2023

- Developed Student Affairs Management System using Blazor and ASP.NET Web API with SOLID principles
- Gained expertise in design patterns and clean code, leading to full-time offer

## OPEN-SOURCE CONTRIBUTIONS

### BigFeat | Automated Feature Engineering Framework

2025

- Enabled regression support in a research-grade automated feature engineering tool, increasing its applicability across supervised ML tasks in academic pipelines

### PurlDB (by AboutCode) | Advisory Data Processing

2025

- Reduced advisory iteration time from 20+ minutes to under 4 minutes on 8M+ security records by optimizing nested loops and data access patterns, boosting tool responsiveness for OSS vulnerability research

## PROJECTS

### SupaSafe | Node.js, React, PostgreSQL, bcrypt, Docker, AES-256

Jan. 2025 – Apr. 2025

- Led development of enterprise-grade password manager with zero-knowledge architecture
- Implemented end-to-end encryption with bcrypt, PBKDF2, and AES-256; designed KEK/DEK key hierarchy
- Containerized full stack using Docker for reproducible development and deployment

## EXTRACURRICULAR ACTIVITIES & ACHIEVEMENTS

### Cybersecurity

2024-2025

- Achieved WIZARD rank (top 3%) on **TryHackMe**; placed 15th on Egypt's national leaderboard in December 2024, solving challenges in web, crypto, and reverse engineering

### Google STEP Internship

2025

- Accepted into Google's highly selective STEP internship program after a multi-stage technical interview process; selected among top undergraduates across EMEA

### Competitive Programming

2024

- Ranked 14th at the 2024 ACM ECPC Qualifications (Egypt), solving algorithmic problems under time and space constraints
- Solved 500+ problems and participated in 10+ rated contests across **Codeforces**, **Leetcode** and similar platforms; achieved Pupil rank on Codeforces

## TECHNICAL SKILLS

**Programming Languages:** C/C++/C#, Python, Go, JavaScript, SQL

**Web Technologies:** ASP.NET Web API, Gin, Node.js, EF Core, Flask, React, Blazor, HTML/CSS

**Tools & Platforms:** Git, Docker, Kubernetes, GCP, Azure, Linux, NumPy, pandas

**Core Skills:** Full Stack Development, Cybersecurity, Machine Learning, DevOps, Cloud Computing, Data Structures & Algorithms, Object Oriented Programming