Buthaina Hassan

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Education

Bachelor of Computer and Systems Engineering   *Alexandria, Egypt*
Faculty of Engineering ,Alexandria University   *2018 – 2023*

Experience

ITI Python Full-Stack Trainee   *Mar 2025 – present*
Information Technology Institute (ITI)   *Alexandria*

- Intensive training in Full-Stack Web Development using Python.
- Hands-on experience in backend (Django/Flask) and frontend (React.js) technologies.

Graduation Project

ZK-Inspector: Zero-knowledge Hate Speech Inspection over Encrypted Communication   *Java, C, Python*

- ZK-Inspector aims to counter hate speech and offensive content in anonymous social posts using Zero-knowledge proofs to inspect encrypted traffic, ensuring user privacy is maintained.
- Implemented ZK-circuit in Jsnark to detect hate speech in TLS 1.3 data records, and this involved integrating several Fuzzy Matching algorithms and TLS 1.3 Key Scheduling.
- Integrated OpenVPN to serve as an additional layer of anonymity and security.
- Integrated proof generation, validation, and network communication using Python's tlslite-ng across system components.

Highlighted Projects

TOURIFY MOBILE APPLICATION   *Node.js, React Native, MySQL*

- A travel-focused social app for sharing travel experiences and deciding on the next destination.
- Applied **Agile** software principles in designing and developing software modules.
- Ensured the security of the application by enforcing authentication and authorization using **JWT**.
- Created front-end and back-end components for RESTful API, handling user registration, profiles, interactions, post publishing, and content filtering.

WEB-BASED MAIL SERVER   *Spring boot, Vue.js*

- Website for viewing, sending, and receiving mails on your email account.
- **Design patterns** used: MVC, Proxy, Builder, Filter, Iterator, Façade, and Factory.

HEALTH MONITORING SYSTEM - LAMBDA ARCHITECTURE   *Java, Hadoop, Spark, DuckDB, Spring boot*

- Implemented the Lambda Architecture to process the massive data arriving from nodes in the HDFS cluster in order to monitor the system's health.
- Generated batch views from the data using **Map-reduce**.
- Designed a speed layer to generate real-time views using **Spark**.
- Used **DuckDB** to aggregate processed data and respond to queries sent by Springboot server.

FILE COMPRESSOR WITH HUFFMAN's ALGORITHM   *Java*

- Implemented Huffman's greedy algorithm for efficient file compression & decompression without data loss.
- Improved file processing speed, minimized memory usage for efficient compression/decompression.

GARBAGE COLLECTOR IMPLEMENTATION   *Java*

- Implemented **Mark & Compact GC** and **Copy GC** algorithms with a comprehensive understanding of memory management and garbage collection.

Technical skills

Languages	Java, Python, JavaScript, C/C++
Frameworks	Node.js, Spring Boot, React Native, Vue.js
Databases	MYSQL, MongoDB