GUSTAVO HENRIQUES

COMPUTER ENGINEERING STUDENT, 22 YEARS

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SKILLS

- Software Development
- Teamwork
- Critical Thinking
- Cybersecurity
- Compilers
- Blockchain

LANGUAGES

- English (Fluent)
- Portuguese (Fluent)

PROGRAMMING LANGUAGES

- Python
- Java
- C/C++
- SQL
- JavaScript
- Prolog
- HTML/CSS
- R

PROFILE

After completing the first year of the Master's in Computer Engineering at FCUL, I am looking for an internship that allows me to develop my thesis and start my professional career. I consider myself a dedicated, hardworking person with good communication skills, qualities that enable me to integrate and contribute positively to multidisciplinary teams.

EDUCATION

FCUL 2024 - PRESENT

Faculdade de Ciências da Universidade de Lisboa

- Currently attending a Master's in Computer Engineering, with a main focus on software development. Throughout the course, I also had the opportunity to explore areas such as cybersecurity and blockchain, deepening technical and practical skills in more demanding contexts.

IST 2021 - 2024

Instituto Superior Técnico

- Bachelor's degree in Computer Engineering, where I acquired a solid foundation in programming, data structures, algorithms, and computational systems.

WORK EXPERIENCE

MATH TUTOR 2020 - PRESENT

- Providing private math tutoring to secondary school students since 2020. This experience has helped me significantly improve my communication skills, as well as my ability to explain complex concepts clearly and adapt to different learning styles.

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MAIN PROJECTS

AGUDA-COMPILER

Development of a full compiler for a custom programming language (AGUDA), using Java and ANTLR4, supporting lexical, syntactic, semantic analysis and code generation. Key aspects:

- Docker-based setup for compilation and isolated testing.
- Full test suite with categorized diagnostics (lexical, syntactic, semantic, execution).
- Shell scripts for batch test automation and logging.
- Clear error messages and structured feedback for each compilation stage.

Secure P2P Messaging App (Data Privacy & Security Project)

Design and implementation of a decentralized peer-to-peer messaging system focused on end-to-end encryption, user authentication, and data privacy, built in Java. Highlights include:

- Secure communication via SSL Sockets using TLSv1.2 and RSA authentication.
- End-to-end encrypted message storage in the cloud using AES-256 encryption.
- Secret sharing technique with 12 cloud replicas (data recoverable from any 8).
- Additional features: encrypted message search and remote cloud data deletion.

Streamlet Consensus Algorithm (Distributed Systems Project)

Implementation of a fault-tolerant consensus protocol in Python based on the Streamlet algorithm for distributed ledgers. Focused on reliable communication, leader election, and block finalization under failures. Key features include:

- Crash fault tolerance and crash-recovery mechanisms.
- Simulation of Byzantine-like scenarios such as forking, delayed delivery, and epoch loss.
- Nodes maintain a replicated blockchain, reaching consensus via notarization and voting rounds per epoch.
- Implementation of core structures: transactions, blocks, and message types (propose, vote, echo).
- Uniform Reliable Broadcast (URB) to ensure message propagation and consistency.

🔗 Note: Click on each project title to access its corresponding GitHub repository.