Rodrigo Silva

Curriculum Vitae

Lisbon, Portugal
+351 964286547
digosilva2003@gmail.com
rodrigo-silva-150b01191
RAGSilva

Academic Background

2021–2024 **Bachelor's Degree in Computer Science and Engineering**, *NOVA School of Science and Technology*, Lisboa

2024–Present **Master's Degree in Computer Science and Engineering**, *NOVA School of Science and Technology*, Lisboa
Specialization in Security and Privacy

Professional Experience

2024 **Backend Developer Intern**, *Celfocus - NOVABASE*, Lisboa
Developed a scalable backend application using Java Spring Boot with REST architecture and MongoDB integration. Implemented security features including JWT authentication, data validation, and CI/CD pipelines with Swagger documentation. Optimized performance through Spring Boot Cache System for user and order queries. Integrated Apache Kafka for high-volume real-time message processing and data streaming. Deployed solution on AWS using Amazon ECR for container management, with dedicated VMs for Kafka, database, and application services.

Academic Projects

2024 **Secure Handshake Protocol**, *Network and Computer Systems Security*
Implemented a secure UDP-based transport protocol with mutual authentication using Password-Based Encryption, ECDSA signatures, and HMAC codes. Integrated Diffie-Hellman key agreement for dynamic parameter negotiation, ensuring confidentiality, integrity, and replay attack protection. Designed modular architecture and integrated with multimedia streaming and TFTP applications.

2024 **Tukano - Cloud Computing Deployment**, *Cloud Computing Systems*
Migrated a video-sharing social network to Microsoft Azure, implementing both PaaS and IaaS solutions. Restructured three-layer REST architecture with managed SQL/NoSQL databases and persistent storage. Containerized application in Azure Kubernetes Service (AKS) with Docker, PostgreSQL/MongoDB cluster deployment, and persistent volumes. Conducted Artillery performance testing for throughput and latency analysis.

2024 **Distributed Systems Implementation**, *Algorithms and Distributed Systems*
Implemented and compared two distributed key-value store models: Multi-Paxos consensus-based State Machine Replication and ABD Quorum protocol. Developed in Java using Babel framework for inter-process communication. Evaluated performance using YCSB benchmark with three replicas, analyzing latency and throughput trade-offs between consensus complexity and distributed read/write costs.

2025 **Trust-Aware Tor Path Selection**, *Distributed Systems Reliability*
Developed a Trust-Aware Path Selection (TAPS) algorithm implementation for enhanced Tor circuit selection. Built autonomous path selection tool processing relay descriptors (IP, bandwidth, ASN, country) with trust policy configurations. Implemented TrustAll algorithm for secure relay classification and guard-middle-exit circuit generation. Evaluated security, performance, robustness, and anonymity-efficiency trade-offs.

Skills

Languages	Java, Spring Boot, Python, C, JavaScript, OCaml
Tools	Docker, Git, WSL, AWS, Azure, Kubernetes, Apache Kafka, Swagger API, MongoDB, Redis
Languages	Portuguese (Native), English (B2), Spanish (B2)