Bilal Belli

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Portfolio : bilalbelli.tech

EXPERIENCE

R&D Engineer - Re-engineering & Perfective Maintenance

Berger-Levrault - 6 months, 2025 - Toulouse, France

- Designed a solution to automate the migration of REST/JSON APIs to REST/Protobuf.
- Developed tools for implementing gRPC in the Spring Boot backend and Angular frontend.
- Applied perfective maintenance to the WeGF microservices platform by migrating its APIs to gRPC.
- Achieved up to 82% faster loading times in the WeGF application, validated through performance testing.
- Authored Confluence documentation: installation and user guides, migration steps, tests plan and results.
- References : anas.shatnawi@berger-levrault.com ; benoit.verhaeghe@berger-levrault.com.

R&D Engineer - Reverse Engineering & Cybersecurity

LIRMM & Pradeo - 9 months, 2024 - Montpellier, France

- Developed a tool for detecting malicious behaviors in iOS applications. (link)
- Designed a decompiler to reverse engineer iOS application Mach-O binary files.
- Automated algorithms for inter-procedural and intra-procedural static analysis (Taint analysis).
- Conducted unit, integration, functional, and technical tests, achieving good software reliability.
- Wrote a scientific paper updating the state of the art in malware detection techniques.
- References : abdelhak.seriai@lirmm.fr ; antoine.floch@pradeo.com.

Web Developer

AlgeriaPartners - 3 months, 2022 - Algiers, Algeria

- Delivered a web application to manage company human resources hierarchy. (link)
- Designed the web application prototype and UI/UX interfaces in Figma.
- Designed the database schema, implemented functional requirements and deployed the app on Google Cloud.

EDUCATION

Master's Degree in Computer Science, Software Engineering — Montpellier, France

University of Montpellier — 2024 – 2025

Engineering Degree in Computer Science, Computer Systems Engineering — Algiers, Algeria

Higher National School of Computer Science (ESI ex INI) — 2019 – 2024

TECHNICAL SKILLS

- Python, Java, JavaScript, TypeScript, HTML, CSS, Node.js, Spring Boot, Angular, Bootstrap, Flask
- Database administration : SQL Server, PostgreSQL, MySQL, NoSQL (MongoDB, Firebase, XML)
- DevOps CI/CD : Git, Jira, Jenkins, Docker, Ansible
- Software testing : Postman, DevTools, Pytest, Playwright, SonarQube
- Networking & Virtualisation : Linux (shell, Ubuntu, Debian, Kali), VMware, GNS3, Nginx

Personal projects

NetFilter - Chrome Extension (JavaScript, HTML)

- Security tool that blocks malicious websites while browsing, based on an updated threat database.

Trendly - Tech Trends Website (Node.js, Vue.js)

- Integrated, filtered, and ranked results from multiple APIs to identify trending tech topics.

MediaPlayer - Web Application (Node.js, Bootstrap, HTML)

- Tool for digital ad banners that allows displaying media elements with precise timing and order.

Dictionary Wifi Attack Tool (Python)

- A proof of concept GUI tool to test a large number of passwords to connect to a WiFi network.

FilesConv - Productivity Desktop Application (Python)

- Integrated multiple APIs to convert various file formats, including support for processing multiple files at once.

Academic projects

NetBoost - Content Delivery Network Architecture Simulation

- Simulated a CDN using GNS3 and virtual machines for : cache servers, an origin server and a backup server.
- Used Nginx as a reverse proxy, Varnish for caching, Bind9 DNS server and Apache2 as a web server.

Automatic PDF Summary Generator using LLMs

- Developed a web application (Flask, NuxtJS, Ngrok) integrating Gemini and Ollama LLM's to : analyze and discuss document annotations, generating a concise final summary. (link)
- Achieved 73% accuracy compared to manually annotated summaries.

QCM Website Generator

- Developed a Java-based project leveraging Model-Driven Engineering (MDE) to automatically generate a QCM (Multiple-Choice Questionnaire) website from simplified human input. (link)
- Defined two metamodels in Eclipse Ecore and implemented a custom DSL using Xtext.
- Performed model-to-model (M2M) transformations with QVT and model-to-text (M2T) code generation with Acceleo to produce the final HTML and JavaScript output.

Bin Packing Problem Optimization Algorithms

- Developed a comprehensive set of solutions and implementations for the 1D Bin Packing problem, including Best Fit, First Fit, Next Fit, Worst Fit, Branch and Bound, Tabu Search, and Genetic Algorithm.
- Proposed a hybrid metaheuristic optimization approach combining World Water Optimization and Simulated Annealing. (link)

Arabic Alphabet Recognizer (CNN)

- Designed and trained a convolutional neural network to recognize arabic alphabet characters using a 7-layer architecture optimized with the Adam algorithm. (link)
- Applied data augmentation and fine-tuned hyperparameters, achieving an accuracy of 84%.

Diabetic Retinopathy Classifier (CNN)

- Developed and trained two CNN classifiers: one for 5 severity levels and another for 3 categories. (link)
- Observed higher accuracy with the 3-class classification model.

Extra Activities

Freelance - Online Store (Flask, Angular, PostgreSQL)

- Developed the UI, backend functionalities, and integrated Stripe payment API.

IT Security Mentor - Shellmates Club

- Introduced IT security to new club members (Cyber risks, Cyber defense, CTF, Certifications).