

# Bilal Belli

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Portfolio : [bilalbelli.tech](https://bilalbelli.tech)

## EXPERIENCE

### **R&D Engineer - Re-engineering & Perfective Maintenance of a microservices platform**

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

- Designed a solution to automate the migration of **REST/JSON APIs** to **REST/Protobuf**.
- Developed tools in **Java** 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](mailto:anas.shatnawi@berger-levrault.com) ; [benoit.verhaeghe@berger-levrault.com](mailto:benoit.verhaeghe@berger-levrault.com).

### **R&D Engineer - Reverse Engineering & Cybersecurity**

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

- Developed a tool in **Python** for **detecting** malicious behaviors in iOS applications. ([link](#))
- Designed a **decompiler** to reverse engineer iOS application Mach-O binary files.
- Automated algorithms for inter 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.serai@lirmm.fr](mailto:abdelhak.serai@lirmm.fr) ; [antoine.floch@pradeo.com](mailto:antoine.floch@pradeo.com).

### **Fullstack Web Developer - Node.js, Express.js, Bootstrap, Mysql**

**AlgeriaPartners** - 3 months, 2022 - Algiers, Algeria

- Delivered a web application to manage company human resources data. ([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**

University of Montpellier

Montpellier, France

2024 – 2025

### **Engineering Degree in Computer Science, Computer Systems Engineering**

Higher National School of Computer Science (ESI ex INI)

Algiers, Algeria

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, Kubernties, Ansible, Maven, Gradle
- ◊ Software testing : Postman, DevTools, Pytest, Playwright, SonarQube
- ◊ Environments : Linux (shell, Ubuntu, Debian, Kali), VMware, GNS3, Nginx

## PERSONAL PROJECTS

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### **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

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### **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

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### **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).

### **Online Instructor and Course Author - Udemy**

- Created a theoretical and practical course explaining the principles of Virtual and Augmented Reality. ([link](#))