BUTACU IONEL-CATALIN

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SUMMARY

Machine-Learning–driven Software Engineer with strong C++/Python foundations and hands-on experience in applied AI, generative models, and cloud AI workflows. Fast at understanding unfamiliar systems, spotting issues, and adapting to new domains. Currently completing an MSc in Artificial Intelligence with focus on Generative AI and modern ML techniques.

CORE SKILLS

Machine Learning & AI: Deep Learning, Generative AI, NLP, RAG Systems, Optimization Algorithms, Anomaly Detection, Model Evaluation, Data Preprocessing

Programming Languages: Python, C++17/20, SQL, Java, JavaScript (ES6+), Bash/PowerShell

Frameworks & Libraries: PyTorch, TensorFlow, Scikit-Learn, Keras, NumPy, Pandas, Qt Framework (5.8–6.12)

Cloud & MLOps: Oracle Cloud, AWS (Foundational), Docker, CI/CD Pipelines, Model Deployment Basics

Software Engineering: Concurrent Programming, Multithreading, Data Modeling, Qt Widgets/QML, Signal–Slot Architecture, Object-Oriented Design, Design Patterns

Development Practices: Git/GitLab, Agile/Scrum, Code Reviews, Unit Testing, Profiling, Debugging

Tools & Platforms: Jupyter/Colab, Anaconda, Weights & Biases, ONNX, Linux, MVC Architectures

Soft Skills: Technical Mentoring, Fast Learning, Adaptability, Problem Framing, Cross-Functional Collaboration

PROFESSIONAL EXPERIENCE

Gemini CAD Systems — Iași, RO

Junior Software Engineer — June 2023 – Present

- Built cross-platform desktop modules in C++/Qt across UI, logic, and data layers.
- Implemented concurrent features and optimized 2D canvas operations.
- Developed serialization systems with versioning and backward compatibility.
- Contributed to cloud-integrated, event-driven communication workflows.
- Supported migration from Qt 5.8 to Qt 6.12 and resolved deprecated components.
- Enhanced internationalization, translations, and permission-based UI flows.

Software Engineer Intern — August 2022 – May 2023

- Developed real-time UI interactions using Qt signal/slot and event-driven patterns.
- Refactored static UI components to improve rendering performance.
- Used GitLab, Jenkins CI/CD, and Agile workflows to deliver incremental updates.

Special Telecommunications Service (STS) — Botoșani, RO

IT Support Staff — Electoral IT Systems — August 2020 – September 2020

- Provided technical support for electoral IT systems (e.g., SIMPV/SICPV).
- Assisted polling-station staff with application usage and hardware operation.
- Ensured system stability through monitoring and incident response.

EDUCATION

Gheorghe Asachi Technical University of Iași — Iași, RO

Master of Science in Artificial Intelligence — October 2024 - June 2026

Advanced Coursework: Deep Neural Networks, Machine Learning Fundamentals, Natural Language Processing (NLP), Reinforcement Learning, Multi-Agent Systems, Cloud Computing Architecture, Big Data Techniques, Edge Computing Applications

Bachelor of Science in Automatic Control and Applied Informatics — October 2020 - June 2024

Core Curriculum: Advanced Computer Programming, Data Structures & Algorithms, Database Management Systems, Real-Time Programming, Systems Theory, Microprocessor-Based Systems, Embedded Systems Engineering, Control Engineering, Computer Networks, Neural Networks & Fuzzy Logic, Knowledge-Based Systems

CERTIFICATIONS

- Oracle Analytics Cloud 2025 Certified Professional (1Z0-1041-25) ☑
- Oracle Cloud Infrastructure 2025 Data Science Professional (1Z0-1110-25) ☑
- Oracle Cloud Infrastructure 2025 AI Vector Search Professional (1Z0-184-25) ☑
- Oracle Cloud Infrastructure 2025 Generative AI Professional (1Z0-1127-25) ☑
- Oracle Cloud Infrastructure 2025 AI Foundations Associate (1Z0-1122-25) ☑

Projects

AI-Enhanced Firewall & Intrusion Detection	**2025**

Built anomaly-detection models for real-time attack signature learning and adaptive threat response.

Ant Colony Optimization Simulation	**2025**

Developed a multi-agent ACO system for graph pathfinding and compared solver strategies.

Real-Time Hand Sign Recognition (Edge NPU)	**2025**

Trained a custom ONNX model on HaGRID and optimized inference for NXP NPUs.

RAG-Based Pharmaceutical Assistant	**2025**

Implemented the retrieval engine for a RAG chatbot providing medication data and contraindications.

Metaheuristic Optimization Framework	**2025**

Co-built Python solvers integrating multiple metaheuristics for high-dimensional optimization.

WiDS Datathon — Top 10 Finalist	**2025**

Developed ML pipelines for fMRI-based age prediction; achieved 8th place nationally.

Volunteer Experience

LOCAL BEST Group Iași   Iași, RO

IT Department Coordinator   Sep 2023 – Aug 2024

- Led IT operations and supported the technical infrastructure for organizational events.
- Mentored volunteers and coordinated execution of technical projects.
- Managed hardware, software licensing, and network resources.

Event Coordinator — JobShop Career Event   Nov 2022 – Apr 2023

- Coordinated logistics and operations for a large student–industry career event.
- Managed scheduling, partner engagement, and on-site execution.
- Improved attendee experience through strategic planning and workflow optimization.

TOPICS Responsible — Prove It 24H Techathon   Dec 2021 – Mar 2022

- Defined technical requirements and coordinated hackathon logistics.
- Supported participants with rules, resources, and real-time assistance.
- Facilitated communication between organizers, industry mentors, and teams.

IT Responsible — BEST Training Weekend   Jan 2021 – May 2022

- Developed and maintained the event website using HTML, CSS, and JavaScript.
- Collaborated with design and marketing teams to fix UI/JS issues.