Mario-Alexandru Nicolae

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Education

Delft University of Technology **Sep 2023 – Jun 2026**
Bachelor of Science in Computer Science *Delft, Netherlands*
- Relevant Coursework: Algorithms & Data Structures, Machine Learning, Computer Graphics, Object-Oriented Programming, Database Systems, Software Engineering, Big Data Processing

National College "Bogdan Petriceicu Hasdeu" **Sep 2019 – Jun 2023**
High School Diploma, Mathematics & Computer Science (GPA: 9.99/10) *Buzău, Romania*
- Valedictorian - Graduated top of school with academic excellence recognition

Projects

Forest Fire Prediction ML Competition | *Python, scikit-learn, Pandas, XGBoost, CatBoost* **Jan 2025**
- **1st Place Winner** among 150 participants in TU Delft ML Hackathon hosted by AI Dreamteam
- Built ensemble ML models to predict wildfire surface areas across US states using weather, geographic, and temporal data
- Engineered features from multi-source datasets (weather aggregates, state demographics, historical wildfire records)
- Optimized models with hyperparameter tuning achieving top performance on custom logarithmic evaluation metric

Splitty - Full-Stack Expense Tracker | *Java Spring Boot, JavaFX, SQL, REST APIs* **Dec 2024**
- Developed production-ready expense splitting application with real-time synchronization and email notifications
- Architected RESTful backend using Spring Boot with MySQL database and implemented comprehensive admin panel
- Built responsive JavaFX frontend with multi-language support and intuitive UI for expense management
- Implemented automated testing suite and followed agile development practices with Git version control

AI Animal Classifier | *Python, TensorFlow, Keras, Tkinter, NumPy* **Nov 2024**
- Trained CNN-based image classifier identifying 40+ animal species with 100% test accuracy on custom dataset
- Designed and implemented deep learning architecture with convolutional layers and data augmentation
- Created interactive GUI with Tkinter for real-time predictions displaying confidence scores for each class

Advanced Ray Tracing Renderer | *C++, OpenGL, BVH Structures, CMake* **Nov 2024**
- Built high-performance ray tracer with BVH acceleration, recursive reflections/transparency, and environment mapping
- Implemented advanced lighting models including Phong shading, bloom effects, and tone mapping
- Optimized rendering pipeline achieving significant performance gains through spatial data structures

Technical Skills

Languages: Python, Java, C++, C, SQL, HTML/CSS, JavaScript, C#, PHP
Technologies/Frameworks: scikit-learn, Pandas, NumPy, TensorFlow, Keras, Spring Boot, JavaFX, React, Git
Tools & Platforms: Linux, Jupyter, Docker, MySQL, PostgreSQL, REST APIs, CMake, LaTeX, Blender

Certifications

Machine Learning with Python | *IBM (Coursera)* **Jan 2026**

Introduction to Artificial Intelligence (AI) | *IBM (Coursera)* **Oct 2025**

Pre-University Physics (PUP01x) | *DelftX (edX)* **Sep 2025**

Awards & Honors

Machine Learning Hackathon - 1st Place | *AI Dreamteam, TU Delft* **Jan 2025**

Hack the Code 2025 - Top 30/1400 | *Reply Challenges* **Dec 2024**

Romanian Baccalaureate Exam - Score: 10/10 | *Informatics & Mathematics* **Jun 2023**

Languages

Romanian: Native **English**: Full Professional (C1-C2) **German**: Professional Working (B2) **French**: Elementary (B1)