

# MARIO-ALEXANDRU NICOLAE

Rijswijk, Netherlands

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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  
Elementary (B1)

**English:** Full Professional (C1-C2)

**German:** Professional Working (B2)

**French:**