Marcel Giovanni Munaba

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Education

Technische Universität München, B.Sc. in Computer Science — Oct 2022 – Present
- GPA: 2.4/5.0
- **Application field:** Mathematics
- **Elective Courses:** Fundamentals of AI, Introduction to Data Science and Statistical Thinking, Business Analytics and Machine Learning, Applied Regression, Patterns in Software Engineering

Hochschule Kaiserslautern, Internationales Studienkolleg — Mar 2022 – Jun 2022
- GPA: 1.5/5.0
- Preparatory college for students whose secondary school certificate is not recognized as equivalent to the German Abitur.

SMAK 1 PENABUR Jakarta, High School Diploma — Jul 2018 – May 2021
- GPA: 91.64/100

Note: In Germany, the range of passing grades is from 1.0 to 4.0, where 1.0 represents the highest mark.

Research

Quantifying Trade-Offs in the Blockchain Trilemma: Empirical Analysis in PoW-based Systems Towards Pareto-Optimal Configurations, Bachelor's Thesis — Ongoing (expected submission: Q4 2025)
- **Research question**: Identify Pareto-optimal configurations for Proof-of-Work blockchains by measuring the blockchain trilemma subconcepts of decentralization, scalability, and security.
- **Methodology**: Deployed private Bitcoin Core networks with varied configuration parameters, then measured decentralization, scalability, and security.
- **Key Contributions**: Established baseline metric impacts, identified key correlations for Pareto efficiency, and developed a reusable framework for future trilemma analyses.

Experience

Working Student - IT Helpdesk, limango GmbH – Munich, Germany — June 2024 – Present
- Delivered desktop support and resolved 10+ technical issues weekly across Windows, macOS, and Linux, earning near-perfect user satisfaction.
- Managed 100+ user accounts, access permissions, security settings, and hardware inventory lifecycle.
- Supported onboarding and offboarding for up to 5 employees per month by configuring hardware, software, and access.

iPraktikum - iOS Developer, Interhyp Gruppe – Munich, Germany — Oct 2024 – Feb 2025
- Partnered with a team of 8 developers in the *iPraktikum* course at TUM, led by the Chair of Applied Software Engineering in partnership with Apple.
- Engineered *HOMEvision*, a VisionOS app leveraging Google Gemini to extract natural, spoken descriptions of dream property characteristics and automatically translate them into smart search filters.

Projects

BenchBit
- A private Bitcoin testing framework. Developed as part of the Bachelor's Thesis titled: *Quantifying Trade-Offs in the Blockchain Trilemma: Empirical Analysis in PoW-based Systems Towards Pareto-Optimal Configurations*. Currently in progress.
- Tools Used: Python, Ansible

TaxiRL   GitHub
- Developed and compared multiple Reinforcement Learning agents in OpenAI's Gymnasium environment.
- Tools Used: Python

Mori: Personal Money Diary
- A mobile Money Manager application written in Flutter. Designed to help users efficiently manage their finances with ease and convenience, whose main functionalities include bill splitting and comprehensive money management.
- Tools Used: Flutter

CensorBot   GitHub
- A simple profanity checker. Implemented a Naive Bayes classifier using scikit-learn and fine-tuned dataset generation with LLM assistance.
- Tools Used: Python

Slash Survivors   itch.io
- A top-down 2D pixel hack and slash game. Fight your way through endless waves of enemies and collect as much points as possible or work your way through objectives in normal mode.
- Tools Used: Godot

Technologies

Languages: Java, C, Python, Dart, R, Swift, HTML/CSS, JavaScript

Technologies: SQL, Node.js, Godot, Flutter, LLM APIs (Gemini, OpenAI)

Organizations

KMKI Bayern (Indonesian Catholic student organization in Bayern) - Food & Beverage Committee, Munich, Bavaria   Aug 2023 – Jul 2024
- Managed and organized teams of cooks and kitchen staff across events with 50+ attendees.

SMAK 1 Cup Committee - Band Competition Division, Jakarta, Indonesia   Oct 2020 – Dec 2020
- Assisted in finding, organizing and providing information to participants.

Languages

Indonesian (Native), English (C1), German (C1)