

Mateusz Nowaczek

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EDUCATION

AGH University of Science and Technology

B.Eng. in Computer Science in Engineering Kraków, Poland | 2023 – Expected 2027

Relevant Coursework: Statistical Data Analysis, Optimization Methods, Databases (SQL & NoSQL), Software Engineering, Algorithms and Data Structures, Object-Oriented Programming (C++)

Scientific Activity: Analytica AGH (2025 -)

- Built NLP pipeline extracting geodetic parameters from natural language input
- Designed prompt parsing and data validation workflows
- Integrated multiple LLM models for conversational user interaction, intent recognition, and structured data extraction

TECHNICAL SKILLS

Languages: Python, TypeScript, C++, SQL

Backend: FastAPI, Django, REST APIs, JWT, OAuth

Frontend: React, Next.js, Tailwind CSS

AI/ML: PyTorch, Scikit-learn, YOLO, LSTM, NLP pipelines

Data: Pandas, Polars, NumPy

Infrastructure: Docker, Linux, Git, GCP

Databases: MySQL, MongoDB

PROJECTS

Hermes AI - NLP Google Calendar Assistant:  [View code](#)

Python application enabling natural-language control of Google Calendar using Gemini models.

- Built NLP-driven assistant translating user prompts into structured calendar operations
- Designed prompt-parsing pipeline for extracting event attributes (title, duration, reminders, color)
- Integrated Google Calendar APIs with validation layer and REST-based workflow
- Implemented create/edit/delete event automation with structured input schema
- Developed modular architecture prepared for Gmail automation extension

Tech stack: Python, Google Cloud APIs, Gemini API, REST integrations

Bee Parasite Visual Detection - Computer Vision Project  [View code](#)

Computer vision pipeline for detecting Varroa destructor parasites on bees using YOLO-based object detection.

- Curated and labeled ~1k bee images from public datasets using Label Studio (healthy vs infected samples)
- Trained YOLOv8 object detection model achieving up to ~80% detection accuracy with confidence scoring and bounding boxes
- Built FastAPI inference service for image upload, model execution, and structured prediction output
- Implemented end-to-end workflow: dataset preparation → training → REST inference endpoint

Tech stack: Python, YOLO models, PyTorch, FastAPI, Label Studio, computer vision, dataset preparation.

RenderX  [View code](#)

Full-stack web platform for trading graphic cards built with Django and Next.js (TypeScript)

- Designed and implemented JWT authentication with HttpOnly cookies, including secure login and registration flows
- Developed responsive customer interface with shopping cart, product listings, ratings, pricing and image handling
- Built advanced product filtering (price, brand, availability) and autocomplete search with optimized API queries
- Created protected REST API endpoints with input validation and role-based access logic
- Modeled relational MySQL schema with many-to-many relationships for products, users and orders

Tech stack: Django, Next.js, TypeScript, REST API, JWT authentication.

AirCast - Kraków Air Quality Forecasting  [View code](#)

Machine learning web application for forecasting air quality in Kraków using historical and near real-time station data.

- Built FastAPI backend for collecting and serving air quality data from KaggleHub datasets and Airly API
- Implemented data processing pipeline for pollutant measurements including PM10, PM2.5, NO2, O3, SO2 and CO
- Designed PostgreSQL schema for storing station metadata and time-series measurements
- Developed Next.js frontend dashboard for visualizing Kraków air quality forecasts and station-level data
- Containerized backend with Docker and Docker Compose for reproducible local deployment

Tech stack: Python, FastAPI, Pandas, Scikit-learn, PostgreSQL, SQLAlchemy, Docker, Next.js, TypeScript.

ADDITIONAL

- Engineering Thesis (in progress): research focused on short-term BTC price prediction and correlation analysis using advanced machine learning and deep learning methods, including LSTM-based models and time-series data processing.
- IBM - *Python for Data Science, AI & Development* - course
- Cambridge English Qualification - *B2 Certificate*
- HackYeah 2025 - Full-stack retirement simulator for ZUS
- Kościuszkon 2026 - AI/full-stack team project
- HERE Technologies Hackathon 2026 - Team software development challenge