

# Marcel Rojewski

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## SUMMARY

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Aspiring AI engineer and Artificial Intelligence student at Poznan University of Technology with a passion for Machine Learning, Computer Vision, and Data Analysis. Experienced in building projects that apply Deep Learning techniques to solve real-world problems. Enthusiastic about exploring how data-driven insights can improve decision-making and automation. Constantly learning and seeking opportunities to contribute to innovative AI solutions.

## EDUCATION

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**Poznan University of Technology**

*Bachelor, Artificial Intelligence*

**Oct. 2022- Feb. 2026**

*Poznań, Poland*

## PROJECTS

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### Image Search Engine

Image Search Engine that retrieves the most similar images from a database based on input queries. The system compares image **embeddings** generated by a Deep Learning model of choice. It supports pretrained architectures like **ResNet50** as well as custom models built from scratch using **Contrastive Learning** techniques such as Triplet Loss and Siamese networks. Additionally, the engine allows for simple **classification models** to serve as embedding generators.

### Board Game State Detection

A system for automatically annotating board game playthrough videos. Utilizes the **OpenCV** library to detect and overlay information about pawn positions, player scores, and dice roll results. The system supports both top-down (bird's-eye) and angled views by applying **perspective transformation**, ensuring consistent performance across various camera angles.

### Image Segmentation

A Deep Learning model for automatic crack detection on tiles. Built from scratch using the **U-Net** architecture in **TensorFlow**, the model segments cracks by generating binary masks from input images. The project involves data preprocessing, model training with **binary cross-entropy loss**, and performance evaluation using metrics such as Intersection over Union (IoU) and Dice coefficient.

## SKILLS, TECHNOLOGIES, LANGUAGES & INTERESTS

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- **Skills:** Version Control (Git); Data Visualization; Computer Vision; Data Analysis; Deep Learning; Machine Learning
- **Technologies:** Python; TensorFlow; OpenCV; Pandas; Seaborn; R; Shiny
- **Languages:** Polish (Native); English (C1)
- **Interests:** Alternative Coffee Brewing Methods; Discovering New Music; Fantasy Books, Musical Theater