



Juliusz Łosiński

AI Engineer · Computer Vision & Multimodal AI

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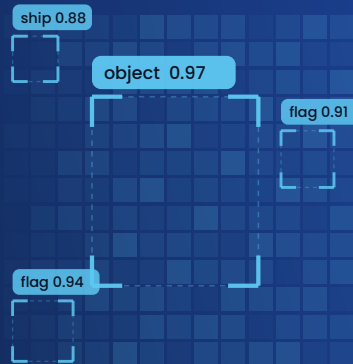
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GITHUB
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LOCATION
Gdańsk / Gdynia, Poland



PROFILE

I'm an AI engineer and computer vision researcher focused on **object detection** and **deep learning** for real-world visual data. I combine research (three peer-reviewed papers on detection architectures and imbalanced data) with hands-on engineering: building production **Python** software for AI-based anomaly detection in a **Kubernetes** environment within an NCBR-funded project. My background in low-level **C/C++** and GPU graphics software at **Intel** and **AMD** gives me a solid understanding of performance and how software runs on hardware. I am especially interested in **vision** and **vision-language models** and in integrating language models into multimodal systems.

EXPERIENCE



Research and Teaching Assistant

OCT 2024 - **PRESENT**

Gdynia Maritime University · Faculty of Computer Science, Dept. of Artificial Intelligence

- Doctoral research in computer vision: automatic detection of International Code of Signals (INTERCO) maritime flags.
- Dataset preparation, training and evaluation of deep learning detection models; benchmarking of CNN architectures and YOLOv8 backbones; research on the imbalanced data problem.
- Results published at KES 2025, KES 2026 and ICCCI 2025 (Springer LNAI); abstract papers at PP-RAI 2024 and 2025.
- Teaching machine learning and artificial intelligence classes to computer science students.

Computer Vision YOLOv8 CNN PyTorch Python Research



Python Developer (AI)

APR 2026 - SEP 2026

Gdańsk University of Technology · TASK IT Centre

- Developed AI-based software for anomaly detection in AIS (Automatic Identification System) vessel data as part of an NCBR-funded research and development project on the CAISE platform.
- Built and ran Python components in a Kubernetes environment.
- Applied AI libraries and language models within the anomaly detection solution.

Python Kubernetes LLMs Anomaly Detection AIS data



Graphics Software Development Intern

JAN 2023 - JUL 2024

Intel

- Developed graphics software based on the DirectX API within a large-scale engineering organisation.

DirectX Graphics OpenGL C/C++ Hardware Programming



Intern Software Developer (C/C++)

APR 2022 - SEP 2022

AMD ODC via Luxoft

- Implemented C/C++ software for AMD in close collaboration with the AMD development team.
- Administered AMD infrastructure components.

C/C++ Infrastructure Linux UML

AT A GLANCE

3

peer-reviewed papers

4+

years of experience

5

conferences (2024-2026)

6.0

final grade in both degrees

COMPUTER VISION

Object Detection YOLOv8

CNN Architectures

Backbone Benchmarking

Image Classification

Imbalanced Data

AI / ML

Deep Learning

Machine Learning NLP

Language Models

Multimodal Systems

Anomaly Detection

FRAMEWORKS & LIBRARIES

PyTorch TensorFlow 2

Ultralytics YOLO OpenCV

Hugging Face Transformers

scikit-learn NumPy

Pandas

LANGUAGES

Python C/C++ SQL

INFRASTRUCTURE & TOOLS

Docker Kubernetes

Proxmox Linux Git

PostgreSQL MS SQL

GPU & INFERENCE

CUDA TensorRT ONNX

vLLM OpenGL DirectX

**Research and Teaching Assistant Intern**
Gdynia Maritime University

OCT 2023 – SEP 2024

- Research and teaching in computer science.

**IT Specialist, Dean's Office (part-time)**
Gdynia Maritime University · Faculty of Computer Science

OCT 2025 – PRESENT

- Deployed and configured Debian servers on Proxmox.
- Implemented a Docker container management system.
- Configured virtual machines and virtual environments.

Proxmox Docker Debian Virtualization

**IT Administrator (contract)**
GEMMI

SEP 2023 – PRESENT

- Administration of Microsoft Azure cloud, including virtual machines.
- Management of Microsoft 365, corporate email and the company website.
- Application of DevOps practices to deploying and maintaining secure IT systems.

Microsoft Azure Virtual Machines Microsoft 365 DevOps IT Security

EDUCATION**Master, Teleinformation Systems**
Gdynia Maritime University

FEB 2023 – JUL 2024

- Specialization: Data Analysis and Processing.
- Final grade: 6.0 (highest).

Bachelor of Engineering, Computer Science
Gdynia Maritime University

OCT 2019 – FEB 2023

- Specialization: Web and Mobile Applications.
- Final grade: 6.0 (highest).
- Rector's scholarship for the best students in three consecutive years (2019/20, 2020/21, 2021/22).

RESEARCH PROJECTS**INTERCO flag detection** DOCTORAL RESEARCH

Computer vision system for detecting International Code of Signals (INTERCO) flags. Trained and benchmarked multiple YOLO models on 26,000 images on the Tryton supercomputer, using a computing grant I obtained from TASK IT Centre. Compared CNN architectures, replaced the YOLOv8 backbone to improve efficiency and studied imbalanced data. Three peer-reviewed papers; full details on page 3.

YOLOv8 PyTorch CNN Backbones Tryton HPC Grant Imbalanced Data
Multimodal AI**AI & Language Models MOOC**

PROJECT MANAGER · EU-FUNDED · 2026–2027

Project manager of *Artificial Intelligence and Language Models in the Energy Transition* (W16), a 30-hour online course (MOOC) carried out at the Faculty of Computer Science, Gdynia Maritime University, for the national NAVOICA platform. Created with OPI PIB and funded by the Ministry of Science and Higher Education and the European Social Fund Plus (PLN 76,000). I coordinate a team of four authors and develop the modules on modern language models (RNN, LSTM, GRU, transformers, BERT, GPT, hybrid models with knowledge bases), AI programming in Python, PyTorch and TensorFlow, and practical LLM applications: document analysis, summarisation and chatbot design.

Project Management LLMs Transformers BERT / GPT Chatbots EU Funding

NAVOICA

RESEARCH INTERESTS

Vision Models

Vision-Language Models

Multimodal LLMs

Object Detection

Maritime AI

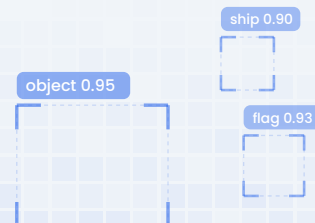
Imbalanced Learning

LEADERSHIP**Founder and Supervisor**
Neuron Student
Research Club

The first student research club dedicated to artificial intelligence at the Faculty of Computer Science, Gdynia Maritime University. I founded the club and supervise its activities, supporting students in developing their AI skills.

CONFERENCES

- KES 2026:** Knowledge-Based and Intelligent Information & Engineering Systems (paper)
- KES 2025:** Knowledge-Based and Intelligent Information & Engineering Systems (paper)
- ICCCI 2025:** Computational Collective Intelligence (paper)
- PP-RAI 2025:** Polish Conference on Artificial Intelligence (abstract paper)
- PP-RAI 2024:** Polish Conference on Artificial Intelligence (abstract paper)

LANGUAGES**Polish:** native**English:** professional working proficiency**CODE****ML projects**github.com/juliuszlosinski/MachineLearning-Projects**RealXEngine**github.com/juliuszlosinski/GameEngine_RealX**Portfolio website**juliuszlosinski.github.io/portfolio**GitHub profile**github.com/juliuszlosinski

PUBLICATIONS

01 Comparison of CNN Architectures for INTERCO Detection

J. Łosiński, I. Czarnowski · KES 2025, 29th Int. Conference on Knowledge-Based and Intelligent Information & Engineering Systems · Procedia Computer Science, Vol. 270C

02 Imbalanced Data Problem in INTERCO Detection

J. Łosiński, I. Czarnowski · ICCCI 2025 · Lecture Notes in Computer Science (LNAI, vol. 16139), Springer, Cham

03 An Evaluation of Selected Backbone Architectures for YOLOv8 in the Detection of International Code of Signals Flags

J. Łosiński, I. Czarnowski · KES 2026 · Procedia Computer Science, ISSN 1877-0509

PROJECT SHOWCASE: INTERCO FLAG DETECTION (PHD)

I built from scratch the experimental system behind my PhD: a **Python** and **PyTorch** framework for recognising International Code of Signals (INTERCO) flags. It covers the whole pipeline: dataset preparation and splitting, class balancing, training, validation with parameter tuning, and automatic performance evaluation. Models were trained on a dataset of 26,000 images on the **Tryton** supercomputer, using a **computing grant** I obtained from TASK IT Centre. The studies below were published in three peer-reviewed papers.

Comparison of 12 CNN classifiers

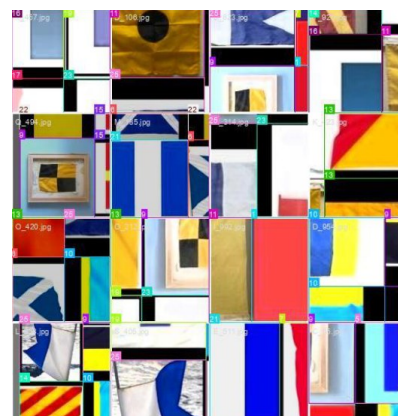
AlexNet, VGG-16, VGG-19, InceptionV3, ResNet-18, ResNet-34, ResNet-50, CSPNet, MobileNetV2, EfficientNet-B0, EfficientNet-B1 and ConvNeXt-Tiny, compared on accuracy, precision, recall, F1-score, number of layers, and training and per-image inference time.

Imbalanced data in object detection

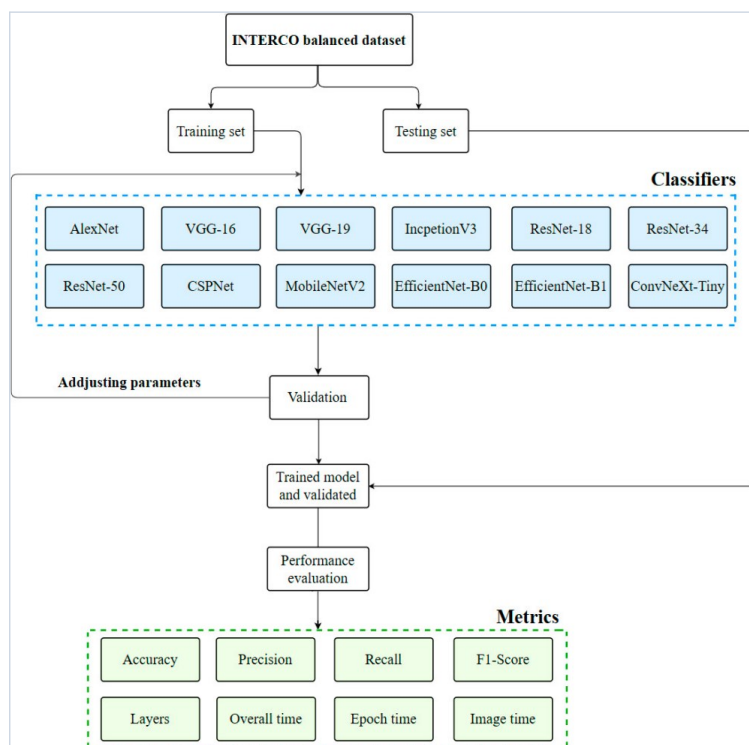
Six balancing methods for minority classes (SMOTE, ADASYN, data augmentation, DCGAN, autoencoder and a default baseline), each combined with four detectors (YOLOv8, YOLOv9, YOLOv10, YOLOv11) and evaluated with precision, recall, F1-score, mAP50 and mAP50-95.

Backbone evaluation for YOLOv8

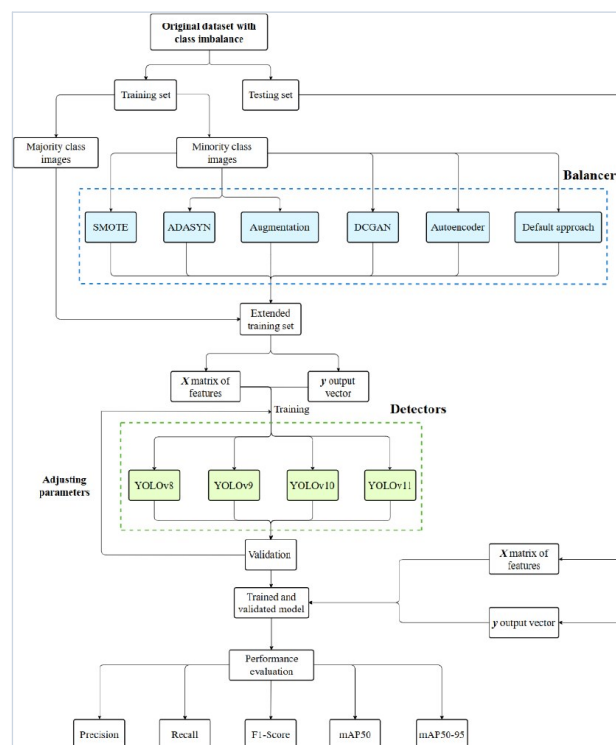
Replacing the YOLOv8 backbone with selected CNN architectures to find a more efficient detector for INTERCO flags.



YOLO training batch with mosaic augmentation.



Pipeline for comparing CNN classifiers on the balanced INTERCO dataset.



Pipeline for balancing minority classes and comparing YOLO detectors.

PROJECT SHOWCASE: REALXENGINE

RealXEngine is my own 3D game engine based on **OpenGL**, **NVIDIA PhysX** and **irrKlang**. I designed it as a modular system: each core subsystem is a separate module, and all of them are integrated through an **Entity-Component-System (ECS)** architecture. A scene is a set of entities (models, camera, skybox, lights, audio sources), and each entity is built from components such as Tag, Transform, Light or Audio3D. The architecture is documented with UML diagrams in the project repository.

Graphics module (OpenGL)

Real-time 3D rendering of textured models, skyboxes and scenes lit by directional, point and spot lights with adjustable colour.

Audio module (irrKlang)

3D positional sound through an Audio3D component, with playback of audio files attached to entities in the scene.

Physics module (NVIDIA PhysX)

Physics simulation of scene objects with NVIDIA PhysX, connected to the rest of the engine through the ECS.

Editor (ImGui)

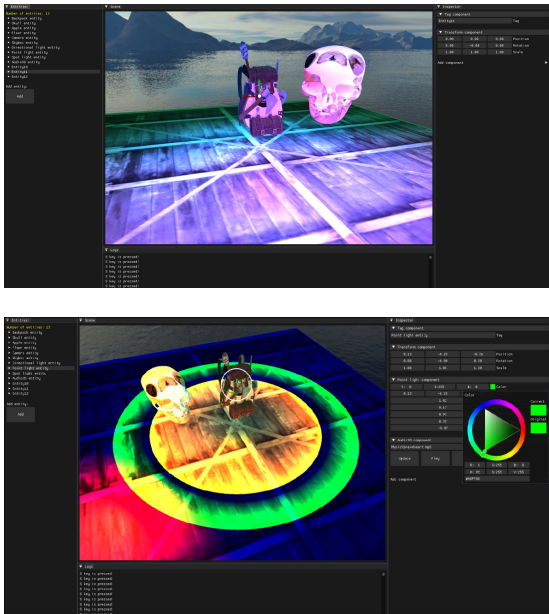
Entity hierarchy, scene view with a transform gizmo, inspector for editing components (transform, light colour, 3D audio) and a log console.

Building the engine from scratch gave me hands-on experience with the GPU rendering pipeline, real-time performance constraints and integrating several external C/C++ libraries into one architecture. This is directly relevant to running AI and computer vision workloads efficiently on real hardware.

- C++
- OpenGL
- ImGui
- NVIDIA PhysX
- irrKlang
- ECS
- 3D Rendering
- Game Engine



Real-time 3D scenes: textured models, skyboxes, dynamic coloured lighting and physics.



RealXEngine editor (ImGui): entity list, scene view, inspector with ECS components (transform, lights, 3D audio) and logs.

COURSES

Mathematical Foundations of Machine Learning AI / ML · OCT 2024	Modern Natural Language Processing in Python AI / ML · OCT 2024	Deep Learning A-Z 2024: Neural Networks, AI & ChatGPT Prize AI / ML · OCT 2024	Machine Learning A-Z: AI, Python & R + ChatGPT Prize AI / ML · OCT 2024
DirectX 11 Programming GRAPHICS · OCT 2024	Computer Graphics with Modern OpenGL and C++ GRAPHICS · SEP 2021	C++ for C Programmers, Part A PROGRAMMING · FEB 2021	C for Everyone: Structured Programming PROGRAMMING · FEB 2021
C for Everyone: Programming Fundamentals PROGRAMMING · FEB 2021	CCNAv7: Introduction to Networks PROGRAMMING · JUN 2021	Build a Modern Computer from First Principles: From Nand to Tetris PROGRAMMING · APR 2020	More C# Programming and Unity PROGRAMMING · AUG 2020
Introduction to C# Programming and Unity PROGRAMMING · AUG 2020			

I hereby consent to the processing of my personal data for the purpose of considering my application for the position.