Tomasz Hawro

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EDUCATION

- **Wrocław University of Science and Technology** — Wrocław, Poland
  Bachelor's degree - Biomedical Engineering, Medical Informatics (Grade 5.5) — 2017 - 2021

- **Wrocław University of Science and Technology** — Wrocław, Poland
  Master's degree - Artificial Inteligence (Grade 5.5) — 2021 - 2023

SKILLS SUMMARY

- **Languages**: Python, Java, JavaScript, SQL, Android,
- **Libraries**: PyTorch, PyTorch Lightning, NumPy, Matplotlib, Optuna, scikit-learn, SciPy, plotly, OpenCV,
- **Tools**: ONNX, GIT, Docker, Linux, MLFlow, WandB, DVC, AutoML, Streamlit, Gradio, Hydra,
- **Other**: Solid knowledge of classical machine learning and neural networks algorithms.

EXPERIENCE

- **BonaSoft**
  Python Developer — Mar 2021 - Jul 2021
  - **Backend development**: Implementation of REST API backend for a website. **Tech**: Python, Django, Swagger,
  - **Unit tests**: Implementation of unit tests for REST API calls. **Tech**: Python, Django.

- **MX Labs**
  Machine Learning Engineer — Jul 2021 - Jul 2023
  - **Deep Learning (DL)**: Implementation of multimodal Deep Neural Networks for blood pressure estimation (modalities: bio signals, face video, metadata). **Tech**: PyTorch, PyTorch Lightning,
  - **DL**: Implementation of lightweight CNN architectures for face metadata extraction. **Tech**: PyTorch,
  - **Productization**: Models productization from PyTorch research phase to ONNX model applicable in C++. **Tech**: PyTorch, ONNX,
  - **Research**: Versatile research on ML and DL approaches for blood pressure estimation based on PPG signals,
  - **Feature Engineering**: Implementation of feature extraction algorithms for the PPG signal. **Tech**: NumPy, SciPy,
  - **AutoML**: Optimizing ML models and preprocessing pipelines with Optuna. **Tech**: Optuna, Joblib, scikit-learn.

- **Vestigit**
  Artificial Intelligence Engineer — Jul 2023 - Present
  - **Research**: Versatile research on classical and DL approaches for efficient DL-based video watermarking solutions and saliency detection,
  - **DL**: Implementation and training of Convolutional Neural Networks (CNN) architectures for image segmentation, object detection and invisible real-time video watermarking.

PROJECTS

- Human Pose Estimation: Implementation (from scratch) of a few Human Pose Estimation neural networks (StackedHourglass, SimpleBaseline, HRNet) and training + evaluation on MPII and COCO datasets
- Heart Rate from face video: Heart Rate (HR) estimation from the video of the face using PSPNet deep neural network (for skin segmentation) and DSP algorithms for further rPPG signal extraction and HR estimation
- YOLOv1 from scratch: Implementation and training of YOLOv1 architecture. **Tech**: Python, PyTorch, mlflow
- YOLOv8 Digits detection: Handwritten digits detection using a YOLOv8 model trained on a custom dataset (demo available online). **Tech**: Python, PyTorch, PyTorch Lightning, ONNX, ONNX Runtime, React

- [Bachelor thesis](): Categorization of auditory evoked potentials using machine learning. **Tech**: Python, scikit-learn, pandas, NumPy, SciPy

- [Master thesis](): The influence of medical signals (ECG, EMG, EOG, PPG) representation on machine learning models results. **Tech**: Python, PyTorch, PyTorch Lightning, scikit-learn, pandas, NumPy, SciPy

- [SqueezeNet Flowers classification](): Classification of 102 flower species using SqueezeNet architecture pretrained on ImageNet ([demo]() available online). **Tech**: Python, PyTorch, PyTorch Lightning, Docker, Gradio

- [GeDa](): Python package that helps to download and arrange the data for ML projects. **Tech**: Python, OpenCV

HONORS AND AWARDS

- Winning the Dean's Award twice

- Winning the [poster]() session competition at *OMatKo!!!* conference - November, 2021

- Winning the competition of IT projects of the AI Tech Summer School during the [poster]() session - May, 2022

LANGUAGES

- **Polish**: Native

- **English**: Proficient