MIROSLAV PURKRABEK

Computer Vision Researcher & Sports Coach

MiraPurkrabek.github.io | mira.purkrabek@gmail.com | MiraPurkrabek | Prague, CZ

SELECTED PUBLICATIONS

- M. Purkrabek and J. Matas, "Probpose: A probabilistic approach to 2d human pose estimation," in *CVPR*, 2025.
- M. Purkrabek and J. Matas, *Detection, pose estimation and segmentation for multiple bodies: Closing the virtuous circle*, 2024.
- M. Purkrabek and J. Matas, "Improving 2d human pose estimation in rare camera views with synthetic data," in *F&G*, 2024.

EXPERIENCE

Researcher
Visual Recognition Group, CTU

February 2019 – Ongoing | Prague, CZ

- Specialized in analyzing the human body, including Pose Estimation, 3D Shape, and UV Map estimation, along with detection and segmentation
- Attended CVPR, ECCV and reviewed for CVPR, ICCV
- Teaching assistant – introduction to recognition and ML
- Co-supervised more junior colleagues in writing their first papers
- Managing the annotation process for our team of annotators – tools, task assignment, and quality control

Head Coach
TJ Sokol Kralovske Vinohrady (SKV)

August 2017 – Ongoing | Prague, CZ

- Czech highest (the world's third highest) league
- Recruited players from lower leagues and developed them to achieve the best result in club history
- Led the coaching staff, organizing our responsibilities to integrate effectively within the sports team

Software Developer
Porsche Engineering Services

March 2020 – July 2022 | Prague, CZ

- Developed Porsche's supercharger and assisted in C++ development, focusing on security protocols
- Developed and maintained a Python-based system for automated integration and system testing
- Collaborated in a start-up-like team at CARIAD on out-of-distribution detection for autonomous driving

Research Assistant
Visual Cognitive Systems lab, UL

October 2018 – March 2019 | Ljubljana, SLO

- Gained initial experience in computer vision research during my Erasmus program
- Prepared and cleaned data for machine learning applications
- Tested and fine-tuned a monocular depth estimation model for an unmanned surface vehicle

IN ONE SENTENCE

I enjoy bridging the gap between basic research and real-world applications.

MOST PROUD OF

Found a way
to combine my two big passions – computer vision and sports

SKV's Growth
from a second-league team to a first league playoff

Best Poster Award
for my communication and presentation skills

STRENGTHS

Goal-oriented | Effective | Team Player | Responsible | Determined

Human Body | UV Map Estimation | Human Pose and Shape Estimation

LANGUAGES

English
French, DELF B1

Python
C
C++

EDUCATION

Ph.D. in Computer Science
Artificial Intelligence, Computer Vision
Czech Technical University in Prague
Feb 2023 – Ongoing

M.S. in Computer Science
Artificial Intelligence, Computer Vision
Czech Technical University in Prague
Oct 2020 – June 2022

B.S. in Cybernetics and Robotics
Czech Technical University in Prague
Oct 2016 – June 2020

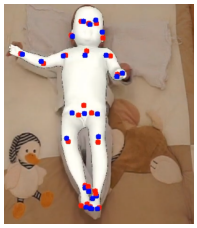
PROJECTS

For more details and latest information, see my website – **MiraPurkrabek.github.io**

Set of Forensic Analytical Tools for Image and Video Processing for Criminal Police Service

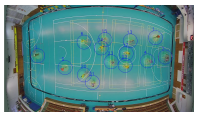
The project, a collaborative effort with VUT (Brno University of Technology), involves creating a suite of advanced forensic tools for the Czech Republic Police, funded by the Ministry of Interior. These tools focus on the automatic processing of images and videos, specifically using human poses to enhance the efficiency and accuracy of criminal investigations.

Modeling infant sensorimotor development



The project led by Matej Hoffman focuses on the behavior of infants to gain a deeper understanding of human development. My contribution to this project involves the precise estimation of 2D poses of babies in videos, a crucial aspect that helps in analyzing and interpreting infant movements and interactions. This work is part of a larger effort to model human behavior, particularly in the early stages of life, providing valuable insights for various applications.

Advanced Video Analysis for Floorball Player Tracking



This project extends my long-standing interest in sports analysis, a journey that began with my bachelor thesis and evolved through my master's work. The aim is to harness video analysis to gain insight into player movements and team dynamics, enhancing coaching strategies and game understanding.

PoseAnnotator

A lightweight, local alternative to CVAT and LabelStudio. Originally developed to create the RePoGen dataset, we have since used it for multiple datasets. This easy-to-use Python tool features a simple GUI for annotating 2D human poses in images. Ideal for researchers and developers, PoseAnnotator simplifies the data labeling process for human pose estimation projects. Our research group already used it not only for annotating pose but also for other structured keypoints like facial landmarks.