MIROSLAV PURKRABEK

Computer Vision Researcher & Sports Coach

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Prague, CZ

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

PUBLICATIONS

- **M. Purkrabek** and J. Matas, "Improving 2d human pose estimation in rare camera views with synthetic data," in *2024 IEEE 18th International Conference on Automatic Face and Gesture Recognition (FG)*, 2024.

EXPERIENCE

Researcher
Visual Recognition Group, CTU

February 2019 – Ongoing Prague, CZ

- Focusing of analysis of human body – 2D Human Pose Estimation, 3D shape and 3D UV Map estimation, detection and segmentation
- Managing annotation process of our annootation workers – anything from annotation tools, through task assignment and to quality checks
- Leading younger students and one engineer doing similar research as me

Head Coach
TJ Sokol Kralovske Vinohrady (SKV)

August 2017 – Ongoing Prague, CZ

- Head coach in the Czech highest (w̃orld 3rd highest) league of floorball
- Drafted players from lower leagues and prepared them to win the best result in club history
- Leading the coaching staff and managed our responsibilities to become functional part of the sports team
- Before becoming head coach, I was coach assitant and U19 head coach

Software Developer
Porsch Engineering Services

March 2020 – July 2022 Prague, CZ

- Part of the team behind Porsche's super charger
- Development and maintenance of a complex Python system for automated (integration and system) testing
- Desining and developing simple GUI for the test system
- Help with C++ development of the charger, mainly security protocols
- Part of a start-up-like team in CARIAD for out-of-distribution detection

Research Assistant
Visual Cognitive Systems lab, UL

October 2018 – March 2019 Ljubljana, SLO

- First experience with computer vision research during my Erasmus
- Data preparation for ML
- Testing and fine-tuning monocular depth estimation model

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

Computer Vision | Human Body | Pose and Shape Estimation

LANGUAGES

English
French, DELF B1

Python
C
C++

EDUCATION

PhD 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

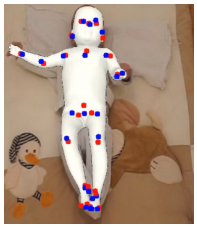
PROJECTS

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 honing in on human figures 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 behaviors, 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. As a coach in the highest league of floorball, my focus in this project is on developing sophisticated methods for tracking floorball players in videos. The aim is to harness video analysis to gain insights into player movements and team dynamics, enhancing coaching strategies and game understanding. This work not only aligns with my academic pursuits but also integrates my practical experience and passion for floorball, striving to bring a new level of analytical depth to the sport.

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.