

# MIROSLAV PURKRABEK

Computer Vision Researcher & Sports Coach

 MiraPurkrabek.github.io

 mira.purkrabek@gmail.com

 MiraPurkrabek

 Prague, CZ



*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

Computer Vision

Human Body

Human Pose and Shape Estimation

## LANGUAGES

English

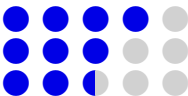
French, DELF B1



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

## 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

- Specialized in analyzing the human body, including 2D Human Pose Estimation, 3D Shape, and 3D UV Map estimation, along with detection and segmentation
- Managing the annotation process for our team of annotators, overseeing annotation tools, task assignment, and quality control
- Leading a team comprising younger students and an engineer in research similar to my own

### Head Coach

TJ Sokol Kralovske Vinohrady (SKV)

 August 2017 – Ongoing

 Prague, CZ

- Head Coach in the Czech highest league, approximately the world's third-highest level of floorball competition
- 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.
- Prior to becoming Head Coach, served as Assistant Coach and U19 Head Coach.

### Software Developer

Porsch 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

# PROJECTS

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For more details and latest information, see my website – [MiraPurkrabek.github.io](https://MiraPurkrabek.github.io)

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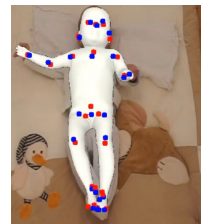
## Set of Forensic Analytical Tools for Image and Video Processing for Criminal Police Service

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.



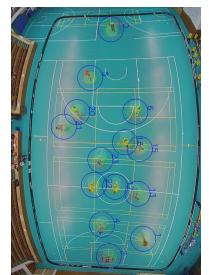
## Modeling infant sensorimotor development

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. As a coach in the highest floorball league, my focus in this project is developing methods to track floorball players in videos. The aim is to harness video analysis to gain insight 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.