

MIROSLAV PURKRABEK

Computer Vision & Machine Learning Researcher

 [MiraPurkrabek.github.io](https://github.com/MiraPurkrabek)

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SELECTED PUBLICATIONS

For the full list (9 publications), see my website – MiraPurkrabek.github.io

BBoxMaskPose v2: Expanding Mutual Conditioning into 3D

[Purkrabek](#), Kolomiiets, Matas; [GitHub](#) ★ 110+ [in review](#)
Better 2D predictions act as reliable prompts for 3D reconstruction, demonstrating that accurate 2D conditioning is a prerequisite for multi-person 3D pose. BMPv2 sets new state of the art in both standard and crowded 2D benchmarks, becoming the first method to surpass 50 AP on OCHuman. As a result, 3D pose estimation in crowds approaches the reliability of the 2D pose predictions.

Detection, Pose Estimation and Segmentation for Multiple Bodies: Closing the Virtuous Circle

[Purkrabek](#), Matas; [GitHub](#) ★ 110+, [online demo](#) [ICCV 2025](#)
Three small specialized models, each conditioned by the others, form a self-improving loop. It beats human-centric foundation models (AP 41.3 → 49.2) and sets a new SOTA on OCHuman in instance segmentation and pose estimation.

ProbPose: A Probabilistic Approach to 2D Human Pose Estimation

[Purkrabek](#), Matas; [GitHub](#) ★ 45+, [Pip package](#) ↓ 350+, [iPad demo](#) [CVPR 2025](#)
Introduces a probabilistic modeling approach that handles partially visible individuals better and reduces false positive predictions. Using out-of-image keypoints is necessary for more reliable modeling of the underlying distribution and robust evaluation.



Improving 2D Human Pose Estimation in Rare Camera Views with Synthetic Data

[Purkrabek](#), Matas; [GitHub](#) ★ 50+, [Best Poster](#) 🏆 [Face and Gestures 2024](#)

RESEARCH EXPERIENCE



Research Visit

[Real Virtual Humans, University of Tübingen](#)

-  December 2025 – March 2026  Tübingen, DE
- Visiting prof. Pons-Moll to deepen my knowledge about 3D avatars



Researcher

[Visual Recognition Group, Czech Technical University in Prague](#)

-  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
- Co-supervising more junior colleagues in writing their first papers
- Managing the annotation process for our team of annotators
- Supervised by prof. Jiri Matas

Research Intern



[Visual Cognitive Systems lab, University of Ljubljana](#)

-  October 2018 – March 2019  Ljubljana, SLO
- Initial experience in computer vision research during my Erasmus stay
- Supervised by prof. Matej Kristan

INDUSTRY EXPERIENCE

Software Developer

[Porsche Engineering Services](#)

-  March 2020 – July 2022  Prague, CZ
- Production code for [Porsche's supercharger](#), 1 000+ units worldwide
- Production code for Porsche Macan's control unit, 100 000+ cars worldwide

IN ONE SENTENCE

I enjoy connecting basic research with real-world applications.

RESEARCH FOCUS

- Human 2D & 3D Pose
- Robustness
- UV Map
- 3D Scene Understanding
- Person Detection and Segmentation

TECHNICAL SKILLS

Python

- Deep learning papers
- Training models (eg. PMPose-h) for 10+ days on 8 GPUs using SLURM
- Porsche automated testing (daily runs)

C / C++

- Production code for Porche Macan
- Plug-n-charge feature for Porsche charger
- University course autonomous robot

FRAMEWORKS

- PyTorch
- OpenCV
- SLURM
- Git
- SMPL
- CUDA
- Blender
- MMCV


AWARDS


Outstanding Reviewer
[CVPR 2025](#)

Best Poster Award
[FG 2024](#)

Award for Excellent Results
[Czech Ministry of Interior](#)

EDUCATION

Ph.D. in Computer Science
Computer Vision, AI
[Czech Technical University in Prague](#)
topic: Robust Human Pose Estimation
supervisor: prof. Jiri Matas
 Feb 2023 – Ongoing (exp. 2026/27)

M.S. in Computer Science
AI, Computer Vision, Cyber Security
[Czech Technical University in Prague](#)
topic: Multi-object Multi-view Tracking
supervisor: prof. Jiri Matas
 Oct 2020 – June 2022

Erasmus – University of Ljubljana, SI