

# Petr Dvořáček

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## EDUCATION

### University of Ostrava

*Pursuing a Doctoral degree in Informatics*

Ostrava, Czech Republic

2021 – Present

### Technische Universität Chemnitz

*Erasmus exchange during Master's*

Chemnitz, Germany

6 months in 2021

### VSB – Technical University of Ostrava

*Bachelor's degree in Control and Information Systems*

*Master's degree in Control and Information Systems*

Ostrava, Czech Republic

2016 – 2019

2019 – 2021

## RESEARCH EXPERIENCE

### University of Ostrava

*Researcher*

Ostrava, Czech Republic

2022 – Present

Computer Vision   Deep Learning   PyTorch   TensorFlow   Python   Linux   LaTeX

- Brain atlas creation based on MRI scans and neural network.
- Semantic segmentation of brain structures in MRI scans.
- MRI (Magnetic Resonance Imaging) scan processing in DICOM format.
- Research publication on the topic of the security of neural networks [1,2].
- Manager of the Student Grant Competition Project.
- Teaching computer vision with emphasis on state-of-the-art deep learning methods.
- Popularization of my research topic for general public (AI Days).

### IT4Innovations National Supercomputing Center

*Research Assistant*

Ostrava, Czech Republic

2018 – 2020

Python   Linux   LaTeX

- Utilized VASP (Vienna Ab initio Simulation Package) to model the electron structure of alloys.
- Became proficient in supercomputer calculations and Linux.
- Presented my work at TU Berlin.

## WORK EXPERIENCE

### Innovatrics

*AI Developer (Internship)*

Brno, Czech Republic

2024 – present

Computer Vision   Deep Learning   PyTorch   Python   Linux

- Improving computer vision algorithms for fingerprint recognition

### Hugmarket Digital s.r.o.

*AI Developer*

Prague, Czech Republic (remote)

2021 – 2022

Computer Vision   Deep Learning   PyTorch   Python   Linux

- One-shot image classification algorithm based on neural network.
- Object detection algorithm based on neural network.

### Ullmanns s.r.o.

*Software Engineer*

Opava, Czech Republic

2019 – 2021

Computer Vision   Deep Learning   PyTorch   TensorFlow   Python   Embedded Devices   Linux

- Fast image classification algorithm for field crops recognition based on neural network.
- Deployment of neural networks to NVIDIA Jetson Nano and Google Coral embedded devices.
- A tool to gather image dataset of field crops.
- Won main prize at the Greenlight Accelerator.
- Great experience of the startup environment.

## Fraunhofer IWU

Software Developer (Internship)

Computer Vision   Deep Learning   TensorFlow

- Fast textile error detection system based on neural network.
- Integrated my solution into the Xeidana software using TensorFlow serving.
- Gave a lecture on TensorFlow.

Chemnitz, Germany

4 months in 2021

## VSB – Technical University of Ostrava

Software Developer

Computer Vision   Deep Learning   TensorFlow   Python   Linux   Embedded Devices   LaTeX

- Fast wood error detection system based on neural network.
- Deployment of neural networks to NVIDIA Jetson embedded devices.
- C# application for streamlining industrial machine development procedures.

Ostrava, Czech Republic

2018 – 2020

## Profiq s.r.o.

Software Developer (Internship)

Linux   JavaScript

- Learned JavaScript, Docker NoSQL databases, improved Linux skills.
- Developed scalable application with serverless backend with Firebase and Node.js.

Ostrava, Czech Republic

3 months in 2019

## SELECTED PUBLICATIONS

- [1] Dvořáček, P., & Hurtík, P. (2022). What is the cost of privacy? In Springer eBooks (pp. 696–706).
- [2] Dvořáček, P., Hurtík, P., & Števuliáková, P. (2023). Effective Black Box Adversarial Attack with Handcrafted Kernels. In Lecture Notes in Computer Science (pp. 169–180).
- [3] Dvořáček, P. (2024). How image distortions affect inference accuracy. In 2024 International Joint Conference on Neural Networks (IJCNN) (pp. 1-7).

## FURTHER SCIENTIFIC ACTIVITIES, AWARDS & ACHIEVEMENTS

### Presentation on IEEE WCCI conference

Yokohama, Japan, 2024

Presentation of my publication [3].

### SGS Project

Ostrava, Czech Republic, 2023

Manager of the Student Grant Competition Project at the University of Ostrava.

### Talent of the Year Award

Ostrava, Czech Republic, 2023

### Moravian-Silesian Region Scholarship

Ostrava, Czech Republic, 2023

I received the Moravian-Silesian Region Scholarship thanks to my study results.

### Presentation on IWANN conference

Ponta Delgada, Portugal, 2023

Presentation of my publication [2].

### Presentation on IPMU conference

Milano, Italy, 2022

Presentation of my publication [1].

### Presentation on DPG 2018 conference

Berlin, Germany, 2018

Presentation about lattice dynamics calculation from first principles in alloys.

### Representation of VSB-TUO at the project week in Antwerp

Antwerp, Belgium, 2017

I was selected to represent VSB-TUO during the project week in Antwerp, where I collaborated with an international group of students to address an industry-related challenge.

## VOLUNTEERING

### Do Rakouska na zkušenou (Up to Austria)

Innsbruck, Austria, 2023

Organization of German language course in Austria.

## SKILLS

**Programming:** Python, C#, JavaScript

**Technologies:** PyTorch, TensorFlow, L<sup>A</sup>T<sub>E</sub>X, Git, Docker, OpenCV, NVIDIA Jetson, Google Coral

**Languages:** Czech (Native), English (Professional), German (Elementary)