

Jonáš Kulhánek

<https://jkulhanek.github.io>
jonas.kulhanek@live.com | +420 728 042 412

EDUCATION

Charles University

MSC IN ARTIFICIAL INTELLIGENCE

Expected Jun 2021

Faculty of Mathematics and Physics

Cum. GPA: 4.00 / 4.00

Major GPA: 4.00 / 4.00

Czech Technical University

BSC IN COMPUTER SCIENCE

Jun 2019

Faculty of Electrical Engineering

Summa cum laude

Cum. GPA: 3.64 / 4.00

Major GPA: 3.74 / 4.00

Final exam grade: A

Sungkyunkwan University

Dec 2017

College of Sciences and Engineering

One semester visiting student

Cum. GPA: 4.00 / 4.00

LINKS

Github:// [jkulhanek](#)

LinkedIn:// [jonaskulhanek](#)

Twitter:// [jonaskulhanek](#)

StackOverflow:// [kulhanek](#)

Google Scholar:// [Jonáš Kulhánek](#)

Research Gate:// [Jonas_Kulhanek](#)

TEACHING

Introduction to Artificial Intelligence

Teaching assistant | Summer 2020

zero-sum games, CSP, MDP, EA, ...

FEL, Czech Technical University

SKILLS

PROGRAMMING

Over 50 000 lines:

C# • Python • JavaScript • C++

Java • React • PyTorch • \LaTeX

Over 5 000 lines:

Haskell • Scheme • SQL

Bash • TensorFlow

Familiar:

TypeScript • YAML • Lua • Docker

LANGUAGES

English C1

French B1

Czech native

EXPERIENCE

CIIRC | RESEARCHER

Jul 2019 – Now

- Visual navigation using deep reinforcement learning (DRL)
- Implementing SoTA DRL algorithms including **Rainbow**, **PAAC**, **AlphaZero**
- Publishing an open-source 3D environment simulator to train DRL agents
- Working with **Tomas Mikolov** on cellular automata applied on NLP
- Researching task-based **dialogue systems**
- Running large distributed GPU trainings
- Achieving **3rd place** in the DSTC9 dialogue state tracking shared task
- **PyTorch**, Slurm, Numpy, ROS, ...

TU DELFT | RESEARCHER

Jan 2019 – Nov 2019

- Visual navigation using deep reinforcement learning (DRL)
- Working under Prof. dr. **Robert Babuska** at 3me
- Publishing open-source DRL PyTorch library
- Evaluating navigation algorithms on real **mobile robots**
- **PyTorch**, TensorFlow, ROS, Numpy, ...

VALATRON | BACKEND DEVELOPER

Jun 2018 – Jan 2019

- Architecting Node.js API backend and .NET Core backend
- Working on SPA frontend (React.js)
- Creating Azure Functions
- Node.js, .NET Core, Azure Functions, React.js, ...

CENTER FOR MACHINE PERCEPTION | RESEARCHER

Feb 2018 – Jun 2018

- Building object detectors using fully convolutional neural networks
- Implementing RetinaNet, FasterRCNN, MaskNet (SoTA at that time)
- Preparing object detection datasets and data pipelines
- **TensorFlow**, Numpy, OpenCV, ...

complete list at <https://jkulhanek.github.io/#resume>.

PUBLICATIONS

Visual Navigation in Real-World Indoor Environments Using End-to-End Deep Reinforcement Learning

Oct 2020

Jonáš Kulhánek and Erik Derner and Robert Babuška,

Designing DRL agent with auxiliary tasks for real-world navigation. Transferring policy pretrained on custom 3D simulator to the real world.

arXiv preprint arXiv:2010.10903

Vision-based navigation using Deep Reinforcement Learning

Sep 2019

Jonáš Kulhánek and Erik Derner and Tim de Bruin and Robert Babuška,

Extending PAAC with auxiliary tasks designed for visual navigation. Evaluating on AI2THOR, House3D, DeepMind Lab environments

2019 European Conference on Mobile Robots (ECMR), 2019, p.1-8

Visual Navigation using Deep Reinforcement Learning

May 2019

Jonáš Kulhánek,

Bachelor thesis