Karel Ha (formerly Duc Trung Ha)

Choose a job you love, and you will never have to work a day in your life. — Confucius

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Citizenship: Czech Republic (EU)

Professional interests

Machine Learning, Deep Learning, Reinforcement Learning, Large Language Models, Prompt Engineering

Experience

Pure Storage, DX (Digital Experience) — Prague, CZ
Artificial Intelligence Engineer — since 11/2024
Member of Technical Staff (Level 4 - Senior Software Engineer)
- prompt engineering & prompt "meta-engineering"
- ChatGPT Enterprise API, GPT 4o & o1, Github Copilot, Python, FastAPI, PyTest, Pydantic, Github, Glean, Kubernetes, Watchdog, Elastic, Spinnaker, Google Suite

Aimtec, Division of Integration — Pilsen, CZ
AI Specialist & Prompt Engineer — 2/2024 – 8/2024
information extraction from unstructured documents using LLMs, with AI-assisted development (Copilot, GPT 4o, Llama, ...) and MLOps (AWS Bedrock)
- prompt engineering & prompt "meta-engineering"
- Claude 3 & 3.5 Sonnet, AWS Bedrock, Python, bash, vim(diff), Onenote...

Porsche Engineering, ADAS Team — Prague, CZ
AI Development Engineer – Autonomous Driving projects — 6/2023 – 11/2023
- ML, computer vision, Python, Transformers, data science, dataset imputation...

Technical University of Munich, Chair of Remote Sensing — Munich, DE
AI Researcher at Computer Vision Research Group — 3/2022 – 4/2023
Deep-learning hybrid uncertainty-aware modelling with Earth observation data
Monte Carlo Dropout on UNet for Semantic Segmentation of the Vaihingen dataset

Volkswagen Group, Computer vision and Tools — Prague & Pilsen, CZ
AI Specialist — 12/2020 – 2/2022
Video Perception for Autonomous Driving / Advanced Driver-Assistance Systems
Core Network Architectures and Optimization - TensorRT, network quantization...

Imperial College London, Faculty of Natural Sciences — London, UK
Deep Learning for Evolutionary Inferences from Large Genomic Data — 4/2019 – 10/2020
Machine learning from population genomics (Pandas, NumPy) of malaria mosquitoes for biological (evolutionary) inferences (migrations, selection strength...) Poster here.

Artificial Intelligence Center, Czech Technical University, CZ — Prague, CZ
Complex Imperfect-Information Game Strategies using Deep Learning — 10/2017–2/2019
Imperfect-information game theory and deep learning (tree search enhanced with neural networks). TensorFlow implementation. Journal paper in AI (version on arXiv).

H2O.ai — remotely for Mountain View, USA
Machine Learning Internship — 4/2017–9/2017
Enhanced the speed of PCA functionality by integrating and benchmarking alternative **Java** implementations of SVD decomposition (Unit Tests, performance tests).

EPFL, School of Computer and Communication Sciences, CH — Lausanne, CH
EDIC Fellow Research Experience — 9/2016–2/2017
Study of game theory, multi-agent systems and multi-agent reinforcement learning.

CERN, Intel & LHCb Online Computing — Geneva, CH
Technical Studentship Programme (full-time work experience) — 4/2015–3/2016
Realtime applications on Intel Xeon/Phi for Online DAQ system of LHCb detector.
- Improved event sorting using OpenMP parallelization and loop tiling in **C++**.

- Implemented buffered read for LHCb DAQ system in **C**.
- Poster *"Feasibility study to use Intel Xeon Phi ... for the LHCb Upgrade"*

IBM, Watson Research — Prague, CZ
Research Scientist (part-time internship) — 5/2013–5/2014 & 10/2014–3/2015
Research project in natural language processing and mobile computing.
- Improved the accuracy of speech recognition for name utterances.
- Processed and verified crowd-annotated dataset for ellipsis resolution.

CERN, Data Storage Group — Geneva, CH
Summer Studentship Programme (full-time work experience) — 6/2014–9/2014
Project in tape storage and data protection.
- Increased speed of CRC-enabled tape write by implementing multithreaded CRC error correction, using *C pthreads*.

Education

Charles University — Prague, CZ
MSc in Computer Science (Discrete Models and Algorithms) — 9/2013–9/2016
Supervisor: Professor M. Hladík. *GPA: 1.00 (summa cum laude).*

Charles University — Prague, CZ
BSc in Computer Science (General Computer Science) — 9/2010–6/2013
Supervisor: Professor A. Pultr. *GPA: 1.05 (summa cum laude).*

Publications

Value functions for depth-limited solving in zero-sum imperfect-information games
V. Kovařík, D. Seitz, V. Lisý, J. Rudolf, S. Sun, **K. Ha**.
Journal Artificial Intelligence, Volume 314, 2023. Preprint *arXiv:1906.06412, 2019.*
Also presented at AAAI-21 Workshop on Reinforcement Learning in Games, 2021.

Refining Subgames in Large Imperfect Information Games
M. Moravčík, M. Schmid, **K. Ha**, M. Hladík, S. J. Gaukrodger.
Proceedings of the 30th AAAI Conference on Artificial Intelligence, 2016.

Achievements and awards

Google Kick Start programming contest — 2021
202nd position out of 5600+ competitors (*96th percentile*) — Round H
765th position out of 10900+ competitors (*92nd percentile*) — Round F
756th position out of 12000+ competitors (*93rd percentile*) — Round C

Facebook Hacker Cup — 2021
1946th position out of 34000+ qualifiers — Round 1

BMI certified IQ test — 2020
IQ score 132 – exceptional at *Analytical Thinking*, *Pattern Recognition*, *Visual Perception* and *Spatial Orientation*; above average at *Abstract Reasoning*

Deep Learning specialization — 2019
5-course specialization (by deeplearning.ai on Coursera) awarded with a certificate.

CERN Summer School of Computing 2015 — 9/2015
Passed the final exam with *special distinction*: 35/36 points (*silver medal* position)

Facebook Hacker Cup — 2015
539th position out of 9700+ qualifiers — Round 2

Mathematical Olympiad, Czech national finals — 2009 & 2010
Top 25 finalists (2009). Top 45 finalists (2010).

Talks and tutorials

AI Supremacy in Games: Deep Blue, AlphaGo, DeepStack, TensorCFR — 6/2018
Keynote speaker – PhD student conference, Bratislava, SK

Dynamic Routing Between Capsules [NIPS 2017] — 3/2018
Talk – Pattern Recognition and Computer Vision Reading Group, CTU, CZ

Teaching experience

Teaching assistant (Czech Technical University, CZ) spring–summer 2018
FUP: Functional Programming (Scheme, Haskell)
Taught tutorials (in Czech and English). Designed programming problems for exams.

Skills

Programming and Software Skils
Proficient in: C/C++, Python, Java, bash, Linux, Git, LaTeX, Vim, IntelliJ/PyCharm.
Familiar with: Keras/TensorFlow, TensorBoard, PyTorch, NumPy, Pandas, Jupyter Lab/Colab, Haskell.

Languages

Czech – C2 (proficient)	*native speaker*
English – C2 (proficient)	*CPE, CAE & FCE*
German – C1 (advanced)	*DSD Stufe II*
Vietnamese – B2 (intermediate)	*native speaker*

French – B1 (intermediate), Spanish – A1 (beginner), Japanese – A1 (beginner)

Other interests

competitive programming, mathematics, puzzles & problem solving, friends, movies, climbing (bouldering), surfing, yoga, calisthenics, martial arts, piano