# **GERGELY PAPP**

MACHINE LEARNING ENGINEER	
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#### Master of Artificial Intelligence University of Amsterdam Grade: 8.1 (Cum Laude)

Bachelor of Computer Science University of Manchester Grade: Second-Upper Class

## WORK EXPERIENCE

10/2020 - 07/2024

- Asura Technologies Ltd. Machine Learning Consultant
  - Achievements
    - Boosted object detection accuracy from 75% to 93%
  - Responsibilities
    - Guided a group of ML developers on computer vision projects
    - Advised on technology & implementations to streamline workflows
  - Technologies
    Python, TensorFlow, Keras, Scikit-Learn, OpenCV, Git
- Machine Learning Engineer

10/2018 - 10/2020

#### Achievements

- Drove startup growth from 12 to 100+ members with innovative, scalable AI solutions
- Engineered an in-house license plate recognition solution from scratch that outperformed competitors both in speed and accuracy
- Responsibilities
  - Design, train and serve real-time **object detection** models, including firearm, car or license plate detection
  - Create and maintain an **ALPR** and **OCR** engine, as well as an automated parking system that tracks cars in a parking lot
  - Prune and distill neural networks for inference
  - Deliver state-of-the-art PoC models for new customers
- Technologies
  - Python, TensorFlow, Keras, Scikit-Learn, OpenCV, Djanjo, Flask, Cloud, REST API, C#, Docker, Git

Alfréd Rényi Institute of Mathematics 10/2020 -07/ 2024

Deep Learning Research Engineer

- Achievements
  - Published the first NeurIPS paper from a Hungarian institute
- Responsibilities
  - Literature review and writing conference papers
  - Research design & development, executing ideas in code
  - Build scalable training pipelines for model training and evaluation
- Technologies
  - Python, PyTorch, Pandas, Docker, Git, Self-supervised image classification, RAG, Cloud, GAN, VAE, Transformers, Huggingface

### EXT. STUDIES

#### **Coursera courses**

- Mathematics for Machine Learning: Linear Algebra
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
- Structuring Machine Learning Projects
- Neural Networks and Deep Learning

### Summer schools

2018 - Cluj - DeepMind - Machine Learning Summer School

### PUBLICATIONS

2023 - Neural Networks -Mode combinability: Exploring convex combinations of permutation aligned models

2023 - **ReScience** -<u>Reproducibility study of</u> <u>"Label-Free Explainability for</u> <u>Unsupervised Models"</u>

2018 - **AITP** - <u>Ordering</u> <u>Subgoals in a Backward</u> <u>Chaining Prover</u>

2018 - **NeurIPS** - <u>Similarity</u> and Matching of Neural Network Representations

### HACKATHONS 💆

2015 MLH - Manchester, UK 2016 MLH - Sheffield, UK 2016 Ultrahack - Helsinki, FI 2018 HackPrague - Prague, CZ 2019 LikeABosch - Budapest, HU



**Pool billiard** European Champion, 2010

**High School** 

Fazekas Mihaly High School Specialized in Mathematics

### National Secondary School Academic Competition

27. place in Mathematics24. place in Programming

### O University of Amsterdam

Teaching Assistant (Part Time)

- Achievements
  - Successfully helped students to understand the fundamentals of deep learning and different neural architectures
  - Corrected bugs and ambiguities that confused students for years
- Responsibilities
  - Teach and design curriculum for AI master students.
  - Enhance course quality through program evaluation
  - Mark students by carefully designed unit tests
  - Hold tutorials and Q&A sessions for students
- Technologies
  - Python, SLURM, PyTorch, NumPy

### <u>Morgan Stanley</u>

Risk Analyst (AI team)

- Achievements
  - Automated data processing workflows, saving 100hrs / week.
- Responsibilities
  - Save working hours by automating quick-decision processes
  - Develop clustering and forecasting models on tabular data
  - Learn about the banking industry while being an expert of coding
  - Train light-weight traditional ML algorithms on big data

#### Technologies

• Python, SKlearn, Pandas, Spark, SQL, Q, Excel

### **PROJECTS**

- **Prisma (Present):** Extracting psychological data, resilience and player communication statistics from e-sport footage, with the goal on enhancing player performance. [Python, Huggingface, Docker, Pygame, Databricks]
- **OSChat (Present):** A bash terminal that distinguishes English prompts from bash prompts. It is an AI Agent for a UNIX operating system. [PyTorch, Huggingface, Docker, Azure, JavaScript, Flask]
- Stitch-BERT (2024): Analyzed how NLP transformers fine-tuned for different languages and tasks relate geometrically and functionally, revealing potential for cross-task insights. [PyTorch, Python]
- **RAG** (2024): As a developer I participated in a RAG project involving vector databases, knowledge graphs and text generation with LLMs. [Python, Huggingface, PyTorch]
- Gaming Bot (2024): Developed a rule-based AI in NodeJS for automating gameplay for a browser game. The bot timed attacks, reacted to attack reports, and logged summaries to an HTML dashboard, saving significant time. [NodeJS, HTML, Angular, JavaScript]
- **MSc Thesis (2023):** Investigated Vision Transformers' ability to generalize across object properties (shape, texture, color, count) on CLEVR-4. This project involved the use of vision transformers. [Python, Huggingface]
- <u>Self-Supervised Learning Toolkit</u> (2022): Created a pip-package standardizing ImageNet evaluation pipelines for self-supervised learning models, enabling consistent community benchmarking. [PyTorch, Python]
- Watermeter Reader (2020): Built an OCR-based Python application to clean, rotate, and detect characters from watermeter images for automated reading. Utilized object detection algorithms. [Python, TensorFlow, Docker]
- <u>AlphaZero</u> (2018): Reimplemented AlphaZero to explore temporal difference learning vs. Monte Carlo methods. The study revealed unique in-game strategies made with Reinforcement Learning. [Python, Keras]
- Chess Engine (2017): Designed a Java-based neural chess engine from scratch without the use of tree search, achieving entry-level play [Java, GraphViz]

08/2017 - 05/2018