Otniel-Bogdan Mercea

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EDUCATION

- **Max Planck Institute for Intelligent Systems (MPI-IS) and University of Tübingen** Tübingen, Germany
  PhD in Computer Science *May 2021 - Current*
  - ◦ **PhD program**: International Max Planck research school for Intelligent Systems (IMPRS-IS).
  - ◦ **Supervisors**: Prof. Zeynep Akata and Prof. Andreas Geiger.
  - ◦ **PhD Topics**: multi-modal and zero/few-shot learning, and efficient adaptation of large-scale models.
  - ◦ **Duties**: Maintaining the EML website, supervising MSc theses, teaching, organising reading groups, interviewing ELLIS candidates.

- **The University of Edinburgh** Edinburgh, Scotland
  Master of Science in Artificial Intelligence; Distinction (Overall 76%) *Sept. 2019 - Aug. 2020*
  - ◦ **Thesis**: "What Neural Networks can not learn?". **Supervisor**: Amos Storkey. **Grade**: Distinction (77%)
  - ◦ **Courses**: Algorithmic Game Theory, Machine Learning, Reinforcement Learning, Natural Language Processing, Computer Vision.

- **Politehnica University of Timisoara** Timisoara, Romania
  Bachelor of Engineering in Computers and Information Technology; Top 3% (Overall 9.70/10) *Oct. 2015 - June 2019*
  - ◦ **Thesis**: "HybridAlpha-Reinforcement Learning on Resource-Constrained Systems". **Supervisor**: Calin-Adrian Popa. **Grade**: 10/10. Thesis also accepted at RAAI 2019 conference.
  - ◦ **Courses**: Data Structures and Algorithms, Linear Algebra, Statistics, Software Engineering, Computer Security.

EXPERIENCE

- **Helmholtz Munich and Technical University of Munich** Munich, Germany
  Guest PhD student *Jan. 2024/June 2024 – Current*
  - ◦ Conducting research in multi-modal learning, supervised by Prof. Zeynep Akata, as part of my PhD. I also helped teaching a seminar.

- **Google Research** Grenoble, France
  Research Intern (4 months) + Student Researcher (4 months) *July 2023 – Mar. 2024*
  - ◦ Working on efficient adaptation of large-scale models, supervised by Anurag Arnab, Alexey Gritsenko and Cordelia Schmid.
  - ◦ Collaborated with Aleksandra Nowak, Utku Evci, Yann Dauphin from Google DeepMind on a related project on efficient adaptation.
  - ◦ Outcome: a patent filling, a CVPR 2024 Highlight paper and a return internship offer for Summer 2024 at Google DeepMind.

- **Everseen** Timisoara, Romania
  Machine Learning Researcher *Nov. 2020 – Apr. 2021*
  - ◦ Researched ways of improving tracking systems in real-time multi-camera scenario.
  - ◦ Outcome: two US patent fillings on real-time multi-camera tracking.

- **Presslabs** Timisoara, Romania
  Junior Software Engineer *July 2018 – Sept. 2018*
  - ◦ Successfully contributed to the development of the open-source MySQL operator (🜂 994 ☆) for Kubernetes.
  - ◦ Outcome: implementation of new functionalities, bug fixing, and testing.

- **3Pillar Global** Timisoara, Romania
  Junior Software Engineer *June 2017- Sept. 2017*
  - ◦ Successfully refactored and optimized key components of the software, and identified and resolved bugs to improve overall performance. Worked in the Decision Lens team.
  - ◦ Outcome: a significantly more readable and easier to maintain codebase.

- **"DSPLabs" research group at Politehnica University of Timisoara** Timisoara, Romania
  Undergraduate Research Assistant *Feb. 2017 - June 2018*
  - ◦ I was selected to develop an interface for the FENP real-time scheduling algorithm. Worked with Cristina and Valentin Stangaciu.
  - ◦ Outcome: assessed the suitability of Litmus-RT for our project. Part of my work was featured in a tutorial on Litmus-RT page.

PATENTS

- **US 20230200569-A1**: "System and method for adjusting a position of an order taking device". Ana Cristina Todoran, **Otniel-Bogdan Mercea**, Razvan-Dorel Cioarga.
- **US 20230206466-A1**: "System and method for tracking and identifying moving objects". Ana Cristina Todoran, **Otniel-Bogdan Mercea**.

PUBLICATIONS

- **CVPRw 2024 (L3D-IVU)**: "Audio-Visual Generalized Zero-Shot Learning using Pre-Trained Large Multi-Modal Models". David Kurzendörfer*, **Otniel-Bogdan Mercea***, A. Sophia Koepke, Zeynep Akata. (⋔ 12 ☆)/⌗. This was a MSc thesis co-supervised by me.
- **CVPR 2024 (Highlight - Top 3.60%)**: "Time-, Memory- and Parameter-Efficient Visual Adaptation". **Otniel-Bogdan Mercea**, Alexey Gritsenko, Cordelia Schmid, Anurag Arnab ⌗.
- **BMVC 2023 (Oral)**: "Video-adverb retrieval with compositional adverb-action embeddings". Thomas Hummel, **Otniel-Bogdan Mercea**, A. Sophia Koepke, Zeynep Akata. (⋔ 5 ☆)/⌗.
- **DAGM GCPR 2023**: "Text-to-feature diffusion for audio-visual few-shot learning". **Otniel-Bogdan Mercea**, Thomas Hummel, A. Sophia Koepke, Zeynep Akata. (⋔ 8 ☆)/⌗.
- **CoRL 2022**: "Learning an Explainable Planner for Autonomous Driving". Katrin Renz, Kashyap Chitta, **Otniel-Bogdan Mercea**, A. Sophia Koepke, Zeynep Akata, Andreas Geiger. (⋔ 205 ☆)/⌗.
- **ECCV 2022**: "Temporal and cross-modal attention for audio-visual zero-shot learning". **Otniel-Bogdan Mercea***, Thomas Hummel*, A. Sophia Koepke, Zeynep Akata. (⋔ 24 ☆)/⌗.
- **CVPR 2022**: "Audio-visual Generalised Zero-shot Learning with Cross-modal Attention and Language". **Otniel-Bogdan Mercea**, Lukas Riesch, A. Sophia Koepke, Zeynep Akata. (⋔ 32 ☆)/⌗.

TECHNOLOGIES USED

- **Fluent in:** Python.
- **Competent in:** Java, C/C++, Shell Scripting, Linux, Android.
- **Some experience in:** Go, Assembly, C#, Kubernetes, TypeScript, JavaScript, HTML, CSS.
- **Libraries used:** React, Redux, NumPy, Pandas, Matplotlib, JAX, PyTorch, TensorFlow, Keras.

TALKS

- **Video & Image Sense Lab,** The University of Amsterdam, May 2022. "Audio-visual Generalised Zero-shot Learning with Cross-modal Attention and Language".
- **IMPRS-IS symposium,** Tübingen Feb. 2021. "From explainability and interpretability to 3D computer vision and efficient learning: increasing the performance of autonomous agents" *(acceptance rate 14%)*.

SELECTED ACHIEVEMENTS AND AWARDS

- **1st Prize** in the Kaggle competition "EEML 2019 - Electricity prediction".
- **Best Smart Mobility Project** awarded at UniHack 2019.
- **Honour Student** awarded in 2018 by the Romanian Academy, Timisoara City Council and Association "Orizonturi Universitare" for outstanding achievements. Every year, only a single student from the whole faculty (BSc and MSc) receives this distinction.
- **Grand Prize** awarded at HackTM Sibiu 2018 edition. HackTm is the biggest software and hardware hackathon in South Eastern Europe.
- **Second place** awarded at national competition "Java competition for universities 2018" organized by Oracle Academy.
- **Honors Diploma** awarded in 2015 by Sebis Town Hall for exceptional achievements in Informatics/Mathematics competitions and for enhancing the prestige of the high school and town.
- **International Contest of Mathematics and Informatics Caius Iacob.**
  - **Competitive programming section** : **Second place** in 2014 and **Mention** in 2015.
  - **Mathematics section** : **Second Place** in 2015.
- **Informatics Olympiad county phase**: **Mention** in 2014 and **Second place** in 2015.

SELECTED SCHOLARSHIPS

- **OxML Scholarship** to attend all tracks at Oxford Machine Learning Summer School. I declined it due to unavailabity to attend all tracks.
- **Google RS Conference Scholarship** awarded to cover all my conference-related travel expenses for CVPR 2024.
- **IMPRS-IS Scholarship** awarded in 2021 as one of the top 57 successful candidates out of 968 applications *(5.8% acceptance rate)* for a fully-funded PhD program at the International Max Planck Research School for Intelligent Systems.
- **Performance Scholarships** awarded every term during my undergraduate for excellent academic performance.
- **Special Scholarship** awarded in 2018, recognizing exceptional results in national contests.

SUPERVISION

- **MSc thesis**: "Audio-Visual Generalized Zero-Shot Learning using Large Pre-Trained Models". **Student**: David Kurzendörfer. Accepted at CVPRw 2024 (L3D-IVU)

TEACHING

- **Teaching Assistant** for the course "Introduction to Machine Learning (INF 3151)" (BSc level) at University of Tübingen in 2023.
- **Teaching Assistant** for the seminar "Advanced Topics in Vision-Language Models" (MSc level) at Technical University of Munich in 2024.

REVIEWING

- CVPR 2022-2024, ECCV 2022-2024, ICCV 2023, NeurIPS 2023, TPAMI 2023, ICLR 2024, Best Romanian AI Thesis Awards 2024.

Highly selective Courses and Summer Schools

- **Oxford Machine Learning Summer School (OxML)**: Selected in 2024 to attend MLx Fundamentals and MLx Representation Learning & Gen. AI, organised by Oxford University' Deep Medicine Program, CIFAR and AI for Global Goals.
- **Eastern European Machine Learning Summer School (EEML)**: Selected as one of only 12 undergraduate students to attend EEML 2019, mainly organized by Google DeepMind, with a competitive *admission rate of just 21%*.
- **Bitdefender**: Attend a highly competitive Cybersecurity course with an *acceptance rate of 10%*. Learned to debug desktop/mobile applications and malware using Assembly.
- **Microsoft Timisoara**: Successfully completed a highly selective software development course with an *acceptance rate of 6.6%*. Learned to develop applications in C# using Bing Maps.