Otniel-Bogdan Mercea, Ph.D.(current)

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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 - May 2025*

- **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 foundation models.
- **Teaching Assistant** for the course "Introduction to Machine Learning (INF 3151)" at University of Tübingen.
- **Other Responsibilities**: Maintaining and improving the EML group website and co-supervising MSc theses.

The University of Edinburgh Edinburgh, Scotland
Master of Science in Artificial Intelligence; Distinction (Overall 76%) *Sept. 2019 - Aug. 2020*

- **MSc thesis**: "What Neural Networks can not learn?". **Supervisor**: Amos Storkey. Grade: 77% (Distinction)
- **Relevant Courses**: Algorithmic Game Theory, Machine Learning,Reinforcement Learning,Natural Language Processing.

Politehnica University of Timisoara Timisoara, Romania
Bachelor of Engineering in Computers and Information Technology; Top 3% (Overall 9.70/10) *Oct. 2015 - June 2019*

- **BEng Thesis**: "HybridAlpha-Reinforcement Learning on Resource-Constrained Systems". **Supervisor**: Calin-Adrian Popa. Grade: 10/10.
- **Relevant Courses**: Data Structures and Algorithms, Linear Algebra, Probabilities, Statistics, Software engineering.

EXPERIENCE

Google Research Grenoble, France/Remote
Research Intern and Student Researcher *July 2023 – Current*

- Working on efficient adaptation of large-scale models.
- Part of the Perception team, supervised by Anurag Arnab, Alexey Gritsenko and Cordelia Schmid.

Everseen Timisoara, Romania
Machine Learning Researcher *Nov 2020 – Apr 2021*

- Filled two patents for advancements in real-time multi-camera tracking systems.
- Researched ways of improving tracking systems through self-supervised depth estimation.

Presslabs Timisoara, Romania
Junior Software Engineer *July 2018 – Sept. 2018*

- Successfully contributed to the development of the open-source MySQL operator for Kubernetes, including the 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, while also identifying and resolving bugs to improve overall performance. This led to a more readable and easier to maintain codebase. Worked in the Decision Lens team.

"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 algorithm, a real-time scheduling algorithm, and part of my work was featured on the official 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

- **BMVC 2023**: "Video-adverb retrieval with compositional adverb-action embeddings". Thomas Hummel, **Otniel-Bogdan Mercea**, A. Sophia Koepke, Zeynep Akata.   ⛓/🖥 Accepted as **Oral**.
- **DAGM GCPR 2023**: "Text-to-feature diffusion for audio-visual few-shot learning". **Otniel-Bogdan Mercea**, Thomas Hummel, A. Sophia Koepke, Zeynep Akata.   ⛓/🖥.
- **CoRL 2022**: "Learning an Explainable Planner for Autonomous Driving". Katrin Renz, Kashyap Chitta, **Otniel-Bogdan Mercea**, A. Sophia Koepke, Zeynep Akata, Andreas Geiger.   ⛓/🖥.
- **ECCV 2022**: "Temporal and cross-modal attention for audio-visual zero-shot learning". **Otniel-Bogdan Mercea***, Thomas Hummel*, A. Sophia Koepke, Zeynep Akata.   ⛓/🖥.
- **CVPR 2022**: "Audio-visual Generalised Zero-shot Learning with Cross-modal Attention and Language". **Otniel-Bogdan Mercea**, Lukas Riesch, A. Sophia Koepke, Zeynep Akata.   ⛓/🖥.

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

- **The University of Amsterdam, Video & Image Sense Lab, May 2022**: Title of the talk: "Audio-visual Generalised Zero-shot Learning with Cross-modal Attention and Language".
- **IMPRS-IS symposium, Tübingen Feb. 2021**: Title of the talk: "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 and Timisoara City Council for outstanding achievements in my professional activity. Every year, only a single student from the whole faculty (BSc+MSc) receives this distinction.
- **Grand Prize** awarded at HackTM Sibiu 2018 edition.
- **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

- **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.

REVIEWING

- CVPRw 2022 (L3D-IVU), ECCV 2022, CVPR 2023, ICCV 2023, NeurIPS 2023, TPAMI 2023, ICLR 2024.

SUPERVISION

- **MSc thesis**: "Audio-Visual Generalized Zero-Shot Learning using Large Pre-Trained Models". Student: David Kurzendörfer.

HIGHLY SELECTIVE COURSES AND SUMMER SCHOOLS

- **Eastern European Machine Learning Summer School (EEML)**: I have been selected as one of only 12 undergraduate students to attend EEML 2019, an event mainly organized by Google DeepMind with a competitive admission rate of just 21%.
- **Bitdefender**: I was selected to attend a higly competitive Cybersecurity course (acceptance rate less than 10%). Learned to debug desktop/mobile applications and malware using Assembly.
- **Microsoft Timisoara**: Demonstrated aptitude for software development by successfully completing a highly selective course with an acceptance rate less than 6.6%. Learned to develop applications in C# using Bing Maps.