


# Otniel-Bogdan Mercea

merceaotniel.github.io/  github.com/MerceaOtniel  stackoverflow.com/u/4178517  linkedin.com/in/otnielmercea  
 bit.ly/GoogleScholarOtniel  otimercea@gmail.com

## EDUCATION

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- **Max Planck Institute for Intelligent Systems (MPI-IS) and University of Tübingen** Tübingen, Germany  
*PhD in Computer Science (Thesis under review.)* May 2021 - Aug. 2024
  - **PhD program:** International Max Planck research school for Intelligent Systems (IMPRS-IS).
  - **Supervisors:** Prof. Zeynep Akata and Prof. Andreas Geiger.
  - **Examination committee:** Prof. Zeynep Akata, Prof. Andreas Geiger, Prof. Justus Thies, Prof. Hilde Kuehne
  - **PhD Topics:** multi-modal and zero/few-shot learning, and efficient adaptation of large-scale models.
  - **Activities:** Maintain the [EML website](#), supervise MSc theses, teach, organize reading groups, and interview 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:** Prof. Amos Storkey. **Grade:** Distinction (77%).
- **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:** Prof. Calin-Adrian Popa. **Grade:** 10/10. Thesis also accepted at RAAI 2019 conference.
  - **Activities:** Hackathons, Competitive programming contests, Capture the flag (CTF) competitions (Cybersecurity).

## EXPERIENCE

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- **Google DeepMind** Zürich, Switzerland  
*Research Intern* Sep. 2024 - Dec. 2024
  - Researching video segmentation with a focus on SAM 2, supervised by Stefano Pellegrini, Jasper Uijlings, and Cordelia Schmid.
  - Outcome: successfully enhanced SAM 2 with amodal perception, offering potential benefits for tracking and segmentation tasks.
- **Helmholtz Munich and Technical University of Munich** Munich, Germany  
*Guest PhD student* Jan. 2024/June 2024 - Aug. 2024
  - Conducted research on multi-modal large language models and audio-visual learning under Prof. Zeynep Akata and assisted with teaching a graduate seminar.
  - Outcome: a CVPR 2024 workshop paper, a preprint under submission, and a postdoctoral offer.
- **Google Research** Grenoble, France  
*Research Intern (4 months) + Student Researcher (4 months)* July 2023 - Mar. 2024
  - Led research on efficient adaptation of large-scale models under the guidance of Anurag Arnab, Alexey Gritsenko, and Cordelia Schmid.
  - Collaborated with Aleksandra Nowak, Utku Evci, Yann Dauphin from Google DeepMind, driving key innovations in model adaptation.
  - Outcome: a patent filing, a CVPR 2024 Highlight paper, a preprint, and a return internship offer at Google DeepMind.
- **Everseen** Timisoara, Romania  
*Machine Learning Researcher* Nov. 2020 - Apr. 2021
  - Researched ways of improving tracking systems in real-time multi-camera scenarios.
  - Outcome: developed the company's first prototype for real-time multi-camera tracking system, leading to two US patent filings.
- **Presslabs** Timisoara, Romania  
*Junior Software Engineer* July 2018 - Sept. 2018
  - Successfully contributed to the development of the open-source MySQL operator ( 1039 ☆) for Kubernetes.
  - Outcome: implemented new functionalities, fixed bugs, and conducted testing.
- **3Pillar Global** Timisoara, Romania  
*Junior Software Engineer* June 2017- Sept. 2017
  - Successfully refactored and optimized critical 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
  - Selected to develop an interface for the [FENP real-time scheduling algorithm](#) collaborating with Cristina and Valentin Stangaciu.
  - Outcome: assessed Litmus-RT's suitability for our project, with my work featured in a tutorial on the [Litmus-RT page](#).

PATENTS

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

PUBLICATIONS

- **Preprint 2024 (Under review):** "Towards Optimal Adapter Placement for Efficient Transfer Learning". Aleksandra I. Nowak, **O.-B. Mercea**, Anurag Arnab, Jonas Pfeiffer, Yann Dauphin, Utku Evci.
- **CVPRw 2024 (L3D-IVU):** "Audio-Visual Generalized Zero-Shot Learning using Pre-Trained Large Multi-Modal Models". David Kurzendörfer\*, **O.-B. Mercea\***, A. Sophia Koepke, Zeynep Akata. ( 13 ). This was a MSc thesis co-supervised by me.
- **CVPR 2024 (Highlight - Top 3.60%):** "Time-, Memory- and Parameter-Efficient Visual Adaptation". **O.-B. Mercea**, Alexey Gritsenko, Cordelia Schmid, Anurag Arnab. .
- **BMVC 2023 (Oral):** "Video-adverb retrieval with compositional adverb-action embeddings". Thomas Hummel, **O.-B. Mercea**, A. Sophia Koepke, Zeynep Akata. ( 6 ).
- **DAGM GCPR 2023:** "Text-to-feature diffusion for audio-visual few-shot learning". **O.-B. Mercea**, Thomas Hummel, A. Sophia Koepke, Zeynep Akata. ( 8 ).
- **CoRL 2022:** "Learning an Explainable Planner for Autonomous Driving". Katrin Renz, Kashyap Chitta, **O.-B. Mercea**, A. Sophia Koepke, Zeynep Akata, Andreas Geiger. ( 228 ).
- **ECCV 2022:** "Temporal and cross-modal attention for audio-visual zero-shot learning". **O.-B. Mercea\***, Thomas Hummel\*, A. Sophia Koepke, Zeynep Akata. ( 24 ).
- **CVPR 2022:** "Audio-visual Generalised Zero-shot Learning with Cross-modal Attention and Language". **O.-B. Mercea**, Lukas Riesch, A. Sophia Koepke, Zeynep Akata. ( 35 ).

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. Only one student from the faculty (BSc and MSc) receives this distinction annually.
- **Grand Prize** awarded at HackTM Sibiu 2018 edition. HackTm is the biggest software and hardware hackathon in South Eastern Europe.
- **Second place** awarded at the 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** offered for Oxford Machine Learning Summer School 2024 (all tracks). Declined due to inability 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:** "Adapting to Misunderstandings of Communicating MLLMs on the Fly". **Student:** Yavuz Durmazkeser.
- **MSc thesis:** "Audio-Visual Generalized Zero-Shot Learning using Large Pre-Trained Models". **Student:** David Kurzendörfer. Accepted at CVPRw 2024 (L3D-IVU).

## TEACHING

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

## REVIEWING

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- 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

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- **Oxford Machine Learning Summer School (OxML)**: Selected in 2024 to attend MLx Fundamentals and MLx Representation Learning & Gen. AI, organized by Oxford University's 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. Received an employment offer (I declined it).
- **Microsoft**: Successfully completed a highly selective software development course with an *acceptance rate of 6.6%*. Learned to develop applications in C# using Bing Maps.