

David Mizrahi

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Research Interests

I am fundamentally interested in building scalable models that can perceive, reason, and act across diverse modalities and tasks. In pursuit of this goal, my current research focuses on several areas: scalable multimodal pretraining strategies, token-based generative methods, scaling properties of large models, and large-scale multimodal data collection, selection, and refinement.

Current Employment

Apple

AI/ML RESEARCH SCIENTIST

Sunnyvale, CA

Nov. 2023 - Present

- Conducting fundamental and applied research on multimodal foundation model pretraining

Publications

PUBLISHED PAPERS

4M-21: An Any-to-Any Vision Model for Tens of Tasks and Modalities

Roman Bachmann*, Oğuzhan Fatih Kar*, [David Mizrahi](#)*, Ali Garjani, Mingfei Gao, David Griffiths, Jiaming Hu, Afshin Dehghan, Amir Zamir. In *Neural Information Processing Systems (NeurIPS)*, 2024. [↗](#)

4M: Massively Multimodal Masked Modeling

[David Mizrahi](#)*, Roman Bachmann*, Oğuzhan Fatih Kar, Teresa Yeo, Mingfei Gao, Afshin Dehghan, Amir Zamir. In *Neural Information Processing Systems (NeurIPS)*, 2023 **[Spotlight]**. [↗](#)

MultiMAE: Multi-modal Multi-task Masked Autoencoders

Roman Bachmann*, [David Mizrahi](#)*, Andrei Atanov, Amir Zamir. In *European Conference on Computer Vision (ECCV)*, 2022. [↗](#)

Composite Relationship Fields with Transformers for Scene Graph Generation

George Adaimi, [David Mizrahi](#), Alexandre Alahi. In *Winter Conference on Applications of Computer Vision (WACV)*, 2023.

[Re] Can gradient clipping mitigate label noise?

[David Mizrahi](#), Oğuz Kaan Yüksel, Aiday Marlen Kyzy. In *ReScience C Journal Volume 7, Issue 2*, 2021. [↗](#)

* Equal contribution

Education

École Polytechnique Fédérale de Lausanne (EPFL)

M.SC. IN DATA SCIENCE

Lausanne, Switzerland

Sep. 2020 - Jan. 2024

- *Advisor*: Prof. Amir Zamir
- *Thesis*: Training any-to-any multimodal models at scale
- Awarded Swisscom Prize for highest GPA out of all graduating Computer Science and Data Science students (1/323)

École Polytechnique Fédérale de Lausanne (EPFL)

B.SC. IN COMPUTER SCIENCE

Lausanne, Switzerland

Sep. 2017- Aug. 2020

Research Experience

Apple

RESEARCH INTERN | MANAGER: AFSHIN DEGHAN

Sunnyvale, CA

Feb. 2023 - Sep. 2023

- Led research efforts on training any-to-any multimodal models for vision-centric use cases

Published “4M: Massively Multimodal Masked Modeling” in NeurIPS 2023.

Visual Intelligence and Learning Lab (VILAB), EPFL

RESEARCH INTERN | SUPERVISOR: PROF. AMIR ZAMIR

Lausanne, Switzerland

Sep. 2021 - Jan. 2024

- Research on multimodal learning, multi-task learning, self-supervised learning, transfer learning, generative models, and Transformers for vision
- Focus on scalable masked modeling methods for training any-to-any multimodal vision models

Published “MultiMAE: Multi-modal Multi-task Masked Autoencoders” in ECCV 2022.

Visual Intelligence for Transportation Lab (VITA), EPFL

RESEARCH INTERN | SUPERVISOR: PROF. ALEXANDRE ALAHI

Lausanne, Switzerland

Summer 2021

- Research on self-supervised learning methods to improve the convergence speed and accuracy of Detection Transformers (DETR)
- Research on the use of Transformers for bottom-up scene graph generation

Published “Composite Relationship Fields with Transformers for Scene Graph Generation” in WACV 2023.

Teaching Experience

École Polytechnique Fédérale de Lausanne (EPFL)

TEACHING ASSISTANT & GUEST LECTURER

Lausanne, Switzerland

2020 - 2022

- CIVIL-456 Deep Learning for Autonomous Vehicles – Guest Lecture on Transformers ([Slides](#)) Spring 2022
- CIVIL-226 Introduction to Machine Learning for Engineers – Head Teaching Assistant Spring 2021, Spring 2022
- COM-308 Internet Analytics – Teaching Assistant Spring 2021
- CS-305 Software Engineering – Teaching Assistant Fall 2020

Visual Intelligence for Transportation Lab (VITA), EPFL

STUDENT ASSISTANT

Lausanne, Switzerland

Jun. 2020 - Jun. 2021

- Worked with Prof. Alexandre Alahi on developing an Introduction to Machine Learning course, responsible for creating lectures, exercises, projects, and automating homework grading

Skills

Programming	Most proficient in Python, with prior experience in Java, Scala, C
Frameworks	PyTorch, JAX, FairScale, DeepSpeed, NumPy, Pandas, Matplotlib
Misc.	Git, LaTeX, Jupyter Notebooks, Slurm, Kubernetes, Docker
Languages	English, French