MAXIME BURCHI

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RESEARCH INTERESTS

I am a PhD student in the Computer Vision Laboratory at the University of Würzburg, advised by Prof. Radu Timofte. My research focuses on learning World Models for Planning. I also have research experience in Automatic Speech Recognition (ASR) and Lip Reading.

EDUCATION

Würzburg University — February 2022 - present
Ph.D. in Computer Science, advised by Prof. Radu Timofte — Würzburg, Germany

ESIEE Paris, Université Gustave Eiffel — September 2018 - July 2021
Master of Engineering in Computer Science — Noisy-le-Grand, France
Machine Learning and Embedded Systems

ESIEE Paris, Université Gustave Eiffel — September 2016 - June 2018
Classes Préparatoires, Scientific Preparatory Classes — Noisy-le-Grand, France

WORK EXPERIENCE

Deep Learning Intern — February 2023 - August 2023
Nvidia, *Advised by Krishna C. Puvvada* — Paris, France

· Performed research on audio-visual speech recognition.
· Creation of french ASR dataset, training and evaluation of speech recognition models.
· Developed an audio-visual ASR model for robust multilingual speech recognition.
· Submitted and presented research work at ICASSP 2024 conference.

Research Intern, Automatic Speech Recognition (ASR) — February 2021 - July 2021
Orange Labs, *Advised by Valentin Vielzeuf* — Rennes, France

· Performed research to reduce end-to-end learning methods complexity in the area of ASR.
· Implemented, trained and evaluated state-of-the-art architectures using PyTorch.
· Developed an efficient architecture design inspired from previous works done in ASR and vision.
· Submitted research work to ASRU 2021 conference.

PUBLICATIONS

Maxime Burchi, Radu Timofte. Learning Transformer-based World Models with Contrastive Predictive Coding. ICLR 2025, Singapore.

Maxime Burchi, Radu Timofte. MuDreamer: Learning Predictive World Models without Reconstruction. 2024.

Maxime Burchi, Krishna C. Puvvada, Jagadeesh Balam, Boris Ginsburg, Radu Timofte. Multilingual Audio-Visual Speech Recognition with Hybrid CTC/RNN-T Fast Conformer. ICASSP 2024, Seoul, South Korea.

Maxime Burchi, Radu Timofte. Audio-Visual Efficient Conformer for Robust Speech Recogntion. WACV 2023, Waikoloa, Hawaii.

Maxime Burchi, Valentin Vielzeuf. Efficient Conformer: Progressive Downsampling and Grouped Attention for Automatic Speech Recognition. ASRU 2021, Cartagena, Colombia.

SKILLS

Software	C/C++, Python, PyTorch, TensorFlow, Java, Shell script, Git, Docker
Spoken Languages	French (native), English (fluent)

SCHOOL PROJECTS

Mechanical automation of two music instruments: Pan Flute and Xylophone

- Created a mechanical orchestra controlled by microcontroller units connected to an iOS app.
- Designed and built xylophone playing machine and prototypes.
- Developed embedded C code on TI MCUs and electrical circuit to control motors.
- Received 2019 ESIEE Paris JDP Award by Texas Instruments.
  See xylophone playing demonstration here