MARTIN NICOLAS EVERAERT

Fourth-year PhD candidate in the Image and Visual Representation Lab (IVRL) at EPFL, Switzerland.
Research: Computer Vision and Generative AI, with a focus on Text-to-Image Diffusion Models.

🌐 martin-ev.github.io

🔶 [Google Scholar]

in martin-everaert

⌂ martin-ev

𝕏 @EveraertMartin

🦋 @everaertmartin.bsky.social

EDUCATION

École polytechnique fédérale de Lausanne (EPFL, Switzerland)
PhD candidate in IVRL lab, anticipated graduation: 02/2026   2021 - Now
MS degree in Computer Science   2019 - 2021

CentraleSupélec (Paris-Saclay, France), *BS/MS degree in engineering*
Supélec engineering curriculum, admitted through national competitive exam   2017 - 2021

Paris-Sud University (France), *BS degree in Fundamental Physics*
Evening courses in addition to courses at CentraleSupélec   2017 - 2018

Lycée Saint Louis (Paris, France), *MPSI/MP**
Mathematics, Physics, Engineering Sciences, Computer Science   2015 - 2017
Intensive 2-year program preparing for top French engineering school exams

PUBLICATIONS

M. N. Everaert, S. Süsstrunk and R. Achanta. "Covariance Mismatch in Diffusion Models", ***Infoscience preprint*** *20.500.14299/242173*, 2024.

We identify a covariance mismatch between the data and the noise distributions in diffusion models. Due to this mismatch, noise affects some components of the data distribution much more than others during training. By realigning these covariances, we improve the model's flexibility and enable better generation.
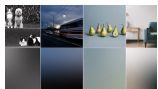
M. N. Everaert, A. Fitsios, M. Bocchio, S. Arpa, S. Süsstrunk and R. Achanta. "Exploiting the Signal-Leak Bias in Diffusion Models", ***WACV 2024***.

Diffusion models are trained on noisy images, but inference starts with pure noise. This negatively affects generating images of a specific style, because noisy images and pure noise have different average colors. We show how to fix this bias without additional training, and how to exploit it to generate better images.
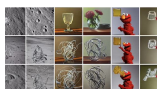
M. N. Everaert, M. Bocchio, S. Arpa, S. Süsstrunk and R. Achanta. "VETIM: Expanding the Vocabulary of Text-to-Image Models only with Text", ***BMVC 2023***.

We learn new tokens in the text-encoder of the diffusion model without having to learn new visual features from exemplar images.

M. N. Everaert, M. Bocchio, S. Arpa, S. Süsstrunk and R. Achanta. "Diffusion in Style", ***Patent filed + ICCV 2023***.

Fine-tuning a diffusion model on a specific style is more efficient if we also adapt the noise distribution to the style.
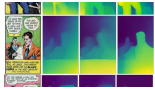
D. Bhattacharjee, **M. N. Everaert**, M. Salzmann, and S. Süsstrunk. "Estimating Image Depth in the Comics Domain", ***WACV 2022***.

> Our depth estimation model for comics images uses an image-to-image translation GAN and a context-aware depth model trained on natural images, which improves depth accuracy.

A. P. Dherse*, **M. N. Everaert***, and J. J. Gwizdała*. "Scene relighting with illumination estimation in the latent space on an encoder-decoder scheme", ***arXiv preprint*** *2006.02333*, 2020.

> In this CS-413 Computational Photography project, we train a model to transfer lighting from one image to another, by manipulating scene and illumination information in the latent space of a U-Net-like architecture.

AWARDS

Teaching Assistant Award for teaching excellence from EPFL Computer and Communication Sciences (2023)

EDIC PhD **Fellowship** (2021)

ACADEMIC ACTIVITIES

Social Media Chair of ICCP 2024.
Reviewer for ICCV 2023, ECCV 2024 and NeurIPS 2024.
Emergency reviewer for BMVC 2023 and ECCV 2024.

Poster presentations: ICCV 2023, BMVC 2023, WACV 2024 (virtually), EDIC Open House 2024, ICVSS 2024, ICCP 2024.
Academic talks: Candidacy exam (2022), AI Tinkerers Lausanne Inaugural Meetup (2024).

Teaching Assistant (TA): EPFL-CS-328: Numerical Methods for Visual Computing and Machine Learning (BS level, Fall 2021, Fall 2023), EPFL-CS-119g: Information, Computation, Communication (BS level Life Science Engineering, Fall 2024), EPFL-CS-413: Computational Photography (MS level, Spring 2022, Spring 2023, Spring 2024).

Supervision of BS/MS students: Semester/research projects (every semester since Fall 2022), ML4Science project (Fall 2022), Computational Photography projects (Spring 2022, Spring 2023, Spring 2024).

INDUSTRY INTERNSHIPS

Thales LAS (Élancourt, France), *Master project in the industry*
Classification of objects on hyperspectral images with Deep Learning techniques
6 months at Thales Land and Air Systems in Élancourt, France
2021

Saclay Nuclear Research Center (France), *Internship*
Automatic rule base verification in a fuzzy expert system
3 months at CEA Paris-Saclay (Paris-Saclay Nuclear Research Center)
2019

TCL (Chengdu, China), *Work internship*
TV assembly tasks in a TCL plant
1 month at TCL (Chengdu, China)
2018

HOBBIES

Board games and brain teasers (e.g., twisty puzzles)

Magic tricks (cards)

3D printing