Diego Porres

dporres@cvc.uab.es • +34 695 86 53 02 • https://blog.diegoporres.com
https://www.linkedin.com/in/diego-porres/ • https://github.com/PDillis • Google Scholar

SUMMARY

Machine Learning Researcher specializing in attention mechanisms for autonomous driving used in end-to-end driving and generative models. PhD in Computer Science with expertise in end-to-end learning, model interpretability, and computer vision. Research published at IEEE IROS, IV, as well as CVPR and NeurIPS workshops, focusing on improving sample efficiency and explainability in vision-based systems. Experienced in developing novel training methodologies that bridge theoretical understanding with practical applications in autonomous driving and creative AI.

EDUCATION

Universitat Autònoma de Barcelona, Ph.D. in Computer Science — Sep 2019 – Dec 2024

- Thesis title: *Guiding AI Attention for Driving and Creative Generation*. Grade: **A, Cum laude**.

Université Côte d'Azur, Master of Mathematics and Interactions, with Specialty in Pure and Applied Mathematics — Sep 2015 – Sep 2017

Università degli Studi dell'Aquila, MSc. in Mathematical Engineering — Sep 2015 – Sep 2017

Universidad del Valle de Guatemala, BSc. in Physics — Jan 2007 – Nov 2012

PUBLICATIONS

CONFERENCES

Diego Porres, Yi Xiao, Gabriel Villalonga, Alexandre François Levy, Antonio M. López, *"Guiding Attention in End-to-End Driving Models"*, IEEE Intelligent Vehicles Symposium (IV) 2024.

- Proposed a novel *Attention Loss* for training-time guidance of vision-based end-to-end driving models
- Demonstrated improved sample efficiency in low-data regimes without architectural modifications
- Achieved more interpretable activation maps while improving driving performance

Yi Xiao, Felipe Codevilla, Diego Porres, Antonio M. López, *"Scaling Vision-based End-to-End Driving with Multi-View Attention Learning"*, IEEE/RSJ International Conference on Intelligent Robots and Systems 2023.

- Co-developed CIL++, a vision-based end-to-end driving baseline with multi-view attention, showing that properly scaling vision-based end-to-end driving models allows them to perform on par with models that require additional modalities
- See it driving a real vehicle in the Spanish Pyrenees here

WORKSHOPS

Diego Porres, *"Towards Kinetic Manipulation of the Latent Space"*, *NeurIPS 2024 Creative AI Track*

- Introduced *visual-reactive interpolation*, a new paradigm for real-time latent space manipulation using live camera feeds
- Demonstrated simple CNN feature extraction enables fine control of generative models without specialized hardware
- Initial tests done with StyleGAN3 (static and live demos; code), later expanded to text-to-image models (live demo; code)

Diego Porres and Alex Gomez-Villa, *"At the edge of a generative cultural precipice"*, *CVPR Fourth Workshop on Ethical Considerations in Creative Applications of Computer Vision 2024*, Seattle, USA.

- Analyzed sustainability and data scarcity challenges in training large-scale generative models and their implications for both new models and incoming artists

Diego Porres, *"Discriminator Synthesis: On reusing the other half of Generative Adversarial Networks"*, *NeurIPS Workshop on Machine Learning for Creativity and Design 2021*, Online.

- Call-to-action to repurpose the typically-discarded GAN Discriminators for novel image synthesis tasks

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher - **Computer Vision Center**, ADAS Team — Jan 2025 – Present

- Developed human-style-informed autonomous driving models as part of the BERTHA (Horizon Europe) project, resulting in better long-tail event handling, analysis, and interpretability
- Leveraging multimodal generalist foundation models for improving generalization in autonomous driving and infrastructure monitoring, using over 6,000 km road dataset from the Generalitat de Catalunya as part of the ELLIOT project (UC 4.1 and 4.2), and involved in the decisions for the data collection for the above dataset
- Supervising PhD students and Master's/Bachelor's interns on research projects in attention mechanisms, explainable AI, memory, vehicle-to-everything (V2X), federated learning, and general computer vision

PhD Researcher - **Computer Vision Center**, ADAS Team — Sep 2019 – Dec 2024

- Published 2 conference papers (IROS, IV) and 3 workshop papers (NeurIPS, CVPR) on attention mechanisms and generative models
- Created open-source tools for latent space manipulation in generative models (StyleGAN3) and contributed to multiple open-source repositories (EarthView dataset, U2Net, CARLA Garage, DragGAN, StyleGAN2-ADA, diffusers)
- During the COVID-19 pandemic, worked remotely on the first cohort of Snap's AR Creator Residency Program, resulting in the Huipil HairStyle Lens, which transfers the style of a *huipil* to the user's hair
- Showcased my GenAI art in multiple venues such as the NeurIPS Workshop on ML for Creativity and Design 2018, 2020, 2021, 2022, 2023, Museo Ixchel de Traje Indígena - 2022, and CVPR Art Gallery 2023 and 2024