Nicolas Cherel

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Experience

Disney Research   *Zürich, Switzerland*
RESEARCH SCIENTIST   *Oct. 2024 - Jan. 2025*
- Video inpainting: research and development for industrial applications

Adobe   *Paris, France*
RESEARCH SCIENTIST INTERN   *Jun. 2022 - Aug. 2022*
- Worked on patch-based methods for texture synthesis and inpainting on surfaces
- Extended image processing tools to arbitrary manifold surfaces

Télécom Paris   *Paris, France*
GRADUATE STUDENT   *Nov. 2020 - Apr. 2024*
- Proposed methods for image and video editing that require only a single training image or video
- Implemented my ideas ranging from high-level math for diffusion models to low-level CUDA kernels for attention mechanisms
- Published several papers in conferences and journals
- Teached several classes for master's students on signal processing, computer vision, and machine learning

                                                                                                     Paris, France
RESEARCH ENGINEER (PRE-DOCTORAL POSITION)   *Mar. 2020 - Oct. 2020*
- Implemented state-of-the-art video inpainting algorithm
- Wrote a literature review on video inpainting

Smiths Detection   *Paris, France*
RESEARCH ENGINEER   *Nov. 2019 - Feb. 2020*
- Worked on object detection in X-ray cargo imaging
- Implemented state-of-the-art domain adaptation methods for achieving multi-site robustness

Gleamer   *Paris, France*
MACHINE LEARNING ENGINEER (1ST EMPLOYEE)   *Apr. 2018 - Sep. 2019*
- Developed deep learning models to detect fractures in X-ray images
- Took many architectural and algorithmic decisions as the main machine learning engineer
- Reached significative improvement in helping radiologists for the task (clinically tested)

Cornell Tech   *New York, United States*
RESEARCH ENGINEER INTERN   *Apr. 2017 - Sep. 2017*
- Improved the data pipeline for predicting bird migrations using Spark, R, and Amazon Web Services
- Reduced cloud computing costs by 80% accounting for $200k saved annually

Microsoft   *Paris, France*
SOFTWARE ENGINEER INTERN   *Jul. 2016 - Feb. 2017*
- Investigated the cold start problem for music recommendation in *Groove Music*
- Wrote production code in C++ for a software with millions of users

Education

Institut Polytechnique de Paris (Télécom Paris)   *Paris, France*
PH.D. 'INTERNAL METHODS FOR THE GENERATION AND INPAINTING OF IMAGES AND VIDEOS'   *2020 - 2024*
Under the supervision of Alasdair Newson, Yann Gousseau, and Andrés Almansa. [Link to manuscript]

ENS Paris-Saclay   *Paris, France*
MSC IN MATHEMATICS, COMPUTER VISION AND MACHINE LEARNING (MVA) - *Graduated with high honors*   *2017 - 2018*
Courses: Object Recognition and Computer Vision, Probabilistic Graphical Models, Graphs, Kernel Methods

Télécom Paris   *Paris, France*
MSC IN COMPUTER SCIENCE AND APPLIED MATHEMATICS - *GPA: 3.99/4.0*   *2014 - 2018*
Courses: Statistics, Optimization, Machine Learning Algorithms, Distributed Systems, Databases

Skills

Programming Languages	Python, C++, Shell, Matlab, Java
Libraries	PyTorch, CUDA, Numpy, TensorFlow, scikit-learn, Pandas
Misc.	Git, GNU/Linux, Spark, Hadoop, SQL, LaTeX
Languages	French (native), English (fluent)

Publications

Infusion: Internal Diffusion for Video Inpainting
Nicolas Cherel, Andrés Almansa, Yann Gousseau, Alasdair Newson
In preparation, 2023. URL: `https://arxiv.org/abs/2311.01090`

Diffusion-based image inpainting with internal learning
Nicolas Cherel, Andrés Almansa, Yann Gousseau, Alasdair Newson
(EUSIPCO 2024) 32nd European Signal Processing Conference, 2024, Lyon. URL: `https://arxiv.org/abs/2406.04206`

Patch-Based Stochastic Attention for Image Editing
Nicolas Cherel, Andrés Almansa, Yann Gousseau, Alasdair Newson
Computer Vision and Image Understanding 238 (Jan. 2024) p. 103866. 2024. URL: `https://www.sciencedirect.com/science/article/abs/pii/S1077314223002461`

A Patch-Based Algorithm for Diverse and High Fidelity Single Image Generation
Nicolas Cherel, Andrés Almansa, Yann Gousseau, Alasdair Newson
2022 IEEE International Conference on Image Processing (ICIP), 2022. URL: `https://hal.science/hal-03822204/`

Assessment of an AI Aid in Detection of Adult Appendicular Skeletal Fractures by Emergency Physicians and Radiologists: A Multi-center Cross-sectional Diagnostic Study
Loïc Duron, Alexis Ducarouge, André Gillibert, Julia Lainé, Christian Allouche, Nicolas Cherel, Zekun Zhang, Nicolas Nitche, Elise Lacave, Aloïs Pourchot, Adrien Felter, Louis Lassalle, Nor-Eddine Regnard, Antoine Feydy
Radiology 300.1 (July 2021) pp. 120–129. 2021

Teaching & reviewing

TEACHING ASSISTANT

Labs and projects supervision in machine learning, deep learning, computer vision, and image processing for courses at Télécom Paris, MVA, M2 Data Science
- 2022-2023: 64h
- 2021-2022: 64h
- 2020-2021: 32h

REVIEWER

IEEE Transactions on Computational Imaging, IEEE Transactions on Multimedia