


Clément Vignac

clement.vignac@epfl.ch

+ 33 6 13 17 04 10

<https://cvignac.github.io/>

 [Github: cvignac](#)

 [Google Scholar](#)



About me

I am a researcher in generative AI for point cloud and graph data. I have just completed my PhD at EPFL under the guidance of Pascal Frossard and co-supervision of Max Welling within the ELLIS program. During my PhD, I developed several denoising diffusion models for molecules, namely EDM, DiGress and MiDi.

Education

- 2018 - (Sept 2023) **PhD in Machine learning**
EPFL, Lausanne, Switzerland
- 2017 - 2018 **MSc. "Mathematics, Vision, Learning"**
MVA, ENS Paris-Saclay, France
- 2014 - 2017 **Engineering Degree (equivalent to MSc.) in Applied Mathematics**
École Polytechnique, Paris, France
- 2012 - 2014 **Preparatory Classes (intensive program to enter top universities)**
Lycée Henri IV and Lycée Louis Le Grand, Paris, France

Research experience

- 2018 - (Sept 2023) **Doctoral Assistant** at EPFL, Switzerland
My research advances methodology on the generation of unordered data (sets and graphs), with a particular focus on molecule generation.
- 2021 (Sept - Dec) **Visiting researcher** at the University of Amsterdam, Netherlands
Supervision by Max Welling as part of the ELLIS PhD program.
We developed the first denoising diffusion model for molecule generation in 3D.
- 2018 (Apr - Sept) **Master thesis** at EPFL, Switzerland
Studied anisotropic graph neural networks with Pascal Frossard
- 2017 (Apr - Aug) **Master thesis** at University of Genoa, Italy
Developed an algorithm for learning-to-rank with A. Rudi and L. Rosasco

Software skills

Deep learning: PyTorch, Tensorflow
Languages: Python, Javascript, Java

Misc: Unix, Git, Docker, Kubernetes, Azure

Languages

French: ●●●●●

German: ●●●○○

English: ●●●●●

Italian: ●●○○○

Scholarships

ELLIS Society PhD program

Swiss Data Science Center fellowship

Other work experience

June - Aug 2016 **Software developer intern** at Pzartech, Tel Aviv, Israel
- Developed a Javascript platform and a API to 3D print spare parts.
- Handled the cloud infrastructure (Azure) and copyright issues in collaboration with layers.

Oct 14 - Apr 15 **Education teacher** at Apprentis d'Auteuil, Toulouse, France
Worked in a school for teenagers with behavioural disorders. I developed projects such an album recording and helped them in their everyday life.

Teaching

Teaching assistant for "Network Machine learning" (2022), "Digital Signal Processing" (2020, 2022) and "A network tour of Data science" (2019).

During my PhD, I supervised 13 students, including 2 junior PhD students and 4 master theses.

Publications

Point cloud and graph generation

- MiDi: Mixed Graph and 3D Denoising Diffusion for Molecule Generation

CV*, N. Osman, L. Toni, P. Frossard, *ECML KDD 2023*

- Digress: Discrete denoising diffusion for graph generation

CV*, I. Krawczuk*, A. Siraudin, B. Wang, V. Cevher, P. Frossard, *ICLR 2023*

- *Equivariant Diffusion for Molecule Generation in 3d*

E. Hoogeboom*, V. Garcia Satorras*, CV*, M. Welling, *Spotlight at ICML 2022*

- *Top-N: Equivariant set and graph generation without exchangeability*

CV, P. Frossard, *ICLR 2022*

Graph neural networks

- *Building powerful and equivariant graph neural networks with structural message-passing*

CV, A. Loukas, P. Frossard, *NeurIPS 2020*

- *On the choice of Graph neural network architectures*

C.V., G. Ortiz-Jiménez, P. Frossard, *ICASSP 2020*

Community service

Reviewer for NeurIPS, ICML and AISTATS

Personal interests

Judo, climbing, hiking, agronomy, chess