Clement Vignac

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Google Scholar link
Github Link

About me

I am a PhD student at EPFL, graduating this June. My research focuses on graph neural networks and generative models for graphs. Recently, I have developed several denoising diffusion models for molecules, represented either as 3D point clouds or as graphs.

Education

2018 - June 2023	PhD in Electrical Engineering in LTS4, EPFL *Lausanne, Switzerland*
2017 - 2018	Master of Science: Mathematics, Vision, Learning *MVA, ENS Paris-Saclay, Cachan, France*
2014 - 2017	Engineering Degree (equivalent to M.Sc.) in Applied Mathematics *École Polytechnique, Paris, France*
2012 - 2014	Preparatory Classes (intensive program to enter top ranking universities) *Lycée Henri IV* and *Lycée Louis Le Grand, Paris, France*

Other research experience

Sept - Dec 2021	ELLIS visit at AMLab under the supervision of Max Welling. Denoising diffusion models for molecule generation in 3d. *University of Amsterdam, Netherlands*
April - Sept 2021	Master thesis on graph neural networks with Pascal Frossard *EPFL, Lausanne, Switzerland*
April - Aug 2017	Master thesis on structured prediction for search engines with Alessandro Rudi and Lorenzo Rosasco *University of Genoa, Italy*

Selected Publications

Digress: Discrete denoising diffusion for graph generation
C.V.*, Igor Krawczuk, Antoine Siraudin, Bohan Wang, Volkan Cevher, Pascal Frossard, *ICLR 2023*

Equivariant Diffusion for Molecule Generation in 3d
Emiel Hoogeboom*, Victor Garcia Sattoras*, C.V.*, Max Welling, *Spotlight at ICML 2022*

Top-N: Equivariant set and graph generation without exchangeability
C.V., Pascal Frossard, *ICLR 2022*

Building powerful and equivariant graph neural networks with structural message-passing
C.V., Andreas Loukas, Pascal Frossard, *NeurIPS 2020*

Other Publications

Midi: Mixed Graph and 3D Denoising Diffusion for Molecule Generation
C.V., Nagham Osman, Laura Toni, Pascal Frossard, *under review*

Modurec: Recommender Systems with Feature and Time Modulation
Javier Maroto, C.V., Pascal Frossard, *ICASSP 2021*

On the choice of Graph neural network architectures
C.V., Guillermo Ortiz-Jiménez, *ICASSP 2020*

Learning anisotropic filters on product graphs
C.V., Pascal Frossard, *ICLR Workshop on Representation learning on graphs and manifolds (2019)*

Teaching

Network Machine learning (EPFL, Spring - Summer 2022)
Digital Signal Processing (EPFL, Fall - Winter 2020 and 2022)
A network tour of Data science (EPFL, Fall - Winter 2019)

During my PhD, I supervised 6 master theses as well as 5 part-time master projects.

Other work experience

June - Aug 2016	Internship as a developer in a startup that designs solutions for spare part recognition. - Developed a platform and a API to 3d print spare parts. - Handled the cloud infrastructure (Azure) and copyright issues in collaboration with layers. *Pzartech, Tel-Aviv, Israel*
2015 - 2016	Group project at École Polytechnique. We prototyped a trolley to make railway maintenance more efficient. I integrated sensors to a Python platform and 3d printed parts of the trolley in a fab-lab. *SETEC Ferroviaire, Paris, France*
Oct 14 - Apr 15	Civic service as an education teacher in a school for teenagers with behavioural disorders. I developed projects such as the recording of an album in a studio and helped the teenagers in their everyday life. *Apprentis d'Auteuil, Toulouse, France*

Talks

Sony AI (December 2022)
Swiss data science center workshop (November 2022)
LearnGraph22 (November 2022)
LoGaG seminar (October 2022)
Swiss equivariant learning workshop (July 2022)
Geneva university seminar (June 2022)
LoGaG seminar (April 2022)
GraphML and beyond seminar (April 2022)
CNRS Groupement de recherche ISIS, France (March 2022)
Swiss Data Science Center (January 2019)

Scholarships

ELLIS Society PhD program, 2021
Swiss Data Science Center PhD fellowship, 2019

Technical skills
Most experienced: Python, PyTorch, PyTorch geometric
Working knowledge: Javascript, Matlab

Languages
French: Native speaker

English: Fluent (TOEFL: 109 in 2017)

German: Intermediate (CEFR: B2 level)

Italian: Conversational (CEFR: B1 level)