Clement Vignac

Contact information
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About me

I am a third year PhD student at EPFL working under the supervision of Prof. Pascal Frossard. My research focuses on machine learning for structured data (sets, graphs and point clouds). I study how to leverage symmetries in a problem in order to make learning more computationally and data efficient.

Education

Nov 2018 - Current PhD in Electrical Engineering in LTS4, EPFL
Lausanne, Switzerland

2017 - 2018 Master of Science -- Mathematics, Vision, Learning
ENS Paris-Saclay, Cachan, France

2014 - 2017 Engineering Degree (equivalent to M.Sc.) in Applied Mathematics.
École Polytechnique, Paris

2012 - 2014 Preparatory Classes (intensive program to enter top ranking universities)
Lycée Henri IV and Lycée Louis Le Grand, Paris

Research experience

April - Sept 2018 Master thesis on graph neural networks with Pascal Frossard
Signal Processing Laboratory 4, EPFL, Lausanne, Switzerland

April - Aug 2017 Master thesis on Structured prediction for search engines with Lorenzo Rosasco & Alessandro Rudi
Laboratory for Computational and Statistical Learning, Genoa, Italy

Selected publication

Building powerful and equivariant graph neural networks with structural message-passing
C.V., Andreas Loukas & Pascal Frossard
Advances in Neural Information Processing Systems 33 pre-proceedings (NeurIPS 2020)

Other publications

On the choice of Graph neural network architectures
C.V., Guillermo Ortiz-Jiménez, Pascal Frossard
ICASSP 2020- IEEE International Conference on Acoustics, Speech and Signal Processing

Modurec: Recommender Systems with Feature and Time Modulation
Javier Maroto, C.V., Pascal Frossard
ICASSP 2021- IEEE International Conference on Acoustics, Speech and Signal Processing

Learning anisotropic filters on product graphs
C.V., Pascal Frossard
ICLR Workshop on Representation Learning on Graphs and Manifolds (2019)

Teaching

Digital signal processing (EPFL, Fall 2020)
A network tour of Data Science (EPFL, Fall 2019)
Co-supervised 2 master theses, 1 research intern and 4 semester project.

Other work experience

June-Aug 2016 — Internship as a developer in a startup - Pzartech, *Tel-Aviv, Israel*
Pzartech designs a solution for spare parts recognition in the industry.
- Developed a platform and an API to 3d print spare parts.
- Handled the Azure cloud infrastructure and the copyright issues.

2015-16 — Prototyped a trolley for SETEC to make railway maintenance more efficient. Integrated sensors to a Python platform and built parts in a fab-lab.

Oct 2014 - Apr 2015 — Civic service as an education teacher for Apprentis d'Auteuil in a school for teenagers with behavioral disorders: organized projects such as the recording of an album and managed them help them in everyday life.

Talks

Swiss data science center, January 2019

Scholarships

PhD fellowship from the Swiss Data Science Center (grant P18-11).

Current projects

Point Cloud compressions with Graph Neural networks
Collaborators: *Roberto G. de A. Azevedo, Philip Chou, Pascal Frossard*
Funded by a Google Faculty Research Award

Molecule generation with Graph neural networks
Collaborators: *Laura Toni, Pascal Frossard*

Technical skills

Most experienced: Python, Pytorch
Working knowledge: Javascript, Java, C++, Matlab

Languages

French: Native speaker
English: Fluent (TOEFL: 109)
German: Intermediate (CEFR: B2)
Italian: Conversational