



Dr. Victor Cohen

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PhD in Operations Research and Machine Learning

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Work Experience

2017-2020

Champs-sur-Marne,
France

PhD in Operations Research and Machine Learning

Ecole des Ponts Paristech (CERMICS)

Under the supervision of Dr. Axel Parmentier and Pr. Frédéric Meunier,
in collaboration with Air France Operations Research Team.

- Machine learning for predictive maintenance
- Partially Observed Markov Decision Processes for maintenance planning optimization at Air France
- Discrete Optimization in Probabilistic Graphical Models

Oct. 2019-Dec. 2019

Cambridge, USA

PhD intern

Massachusetts Institute of Technology (MIT)

Under the supervision of Pr. Patrick Jaillet.

- Design of algorithms for online optimization problems.

2017

Orly, France

Intern in Operations Research and Machine learning

Air France Operations Research Team

Application of machine learning algorithms for predictive maintenance.

2016

Montréal, Canada

Data scientist intern

Ecole Polytechnique de Montréal in collaboration with AlayaCare.

Design and application of machine learning algorithms for
healthcare monitoring at home.

2015-2016

Montréal, Canada

Research internship in Operations Research

Ecole Polytechnique de Montréal (CIRRELT)

Design and application of algorithms to optimize treatment
schedule for radiotherapy.

2014

Santander, Spain

Research Internship in Statistics

Instituto de hydraulica ambiental

Application of statistical algorithms for sea level prediction.

Education

2016-2017
Paris, France

Master's Degree (M2):

- Operations Research (Master Parisien de Recherche Opérationnelle, MPRO) at Conservatoire national des Arts et Métiers (CNAM).
- Machine Learning (Mathématique/Vision/Apprentissage, MVA) at Ecole Normale Supérieure de Cachan.

2014-2017
Champs-sur-Marne,
France

Master's Degree in engineering at Ecole des Ponts ParisTech

Major in applied mathematics and computer sciences.

2013-2014
Champs-sur-Marne,
France

Bachelor's Degree in engineering at Ecole des Ponts ParisTech

Major in applied mathematics and computer sciences.

Teaching

2018-2019
Champs-sur-Marne,
France

Teacher for undergraduate students at Ecole des Ponts Paristech

- Operations Research courses.
- Optimization courses.

2013-2015
Paris, France

Individual courses for students in Mathematics and Physics

Programming skills

Programming languages

C++, Python, Julia, Matlab, Scilab, SQL, JavaScript.

Big Data technologies

Apache Spark, Hadoop.

Languages

French
English
Spanish
German

Native
Highly proficient
Intermediate
Conversational

Research Areas

My research focuses on data-driven optimization problems for various applications.

- Discrete Optimization: linear programming, integer programming, decomposition methods.
- Stochastic Optimization: Markov decision processes, multi-stage stochastic problems.
- Probabilistic Graphical Models: inference problems, influence diagrams.
- Statistical Learning: prediction tasks, estimators.

Publications

Published papers:

- Parmentier, A., Cohen, V., Leclere, V., Obozinski, G., & Salmon, J. **Integer programming on the junction tree polytope for influence diagrams**, *INFORMS Journal of Optimization*. 2020.

Preprints:

- Cohen, V., Parmentier, A. **Linear Programming for Decision Processes with Partial Information**, *arXiv:1811.08880*. 2018.
- Cohen, V., Parmentier, A. **Two generalizations of Markov Blankets**. *arXiv:1903.03538*. 2019.
- Cohen, V., Parmentier, A. **Integer programming for weakly coupled stochastic dynamic programs with partial information**. *arXiv:2012.00645*. 2020.

On-going papers:

- Cohen, V., Parmentier, A. **Data-driven maintenance optimization**. 2020

Talks in conferences

- Generalization of Markov Blanket to understand dependencies in Graphical Models, [JFRB](#), May 2018, Toulouse.
- Linear Programming for Influence Diagrams, [ISMP](#), July 2018, Bordeaux.
- Linear Programming for Influence Diagrams, [Conference on Discrete Optimization and Machine Learning](#), July 2018, Tokyo.
- Linear Programming for Influence Diagrams, [PGMO days](#), November 2018, Saclay.
- Linear Programming for Decision Processes with Partial Information, [ROADEF](#), February 2019, Le Havre.
- Linear Programming for Decision Processes with Partial Information, [17th Cologne-Twente Workshop on Graphs and Combinatorial Optimization](#), July 2019, Twente.
- Data-driven Maintenance Optimization, [ROADEF](#), February 2020, Montpellier. Finalist of young researcher award.

Science Popularization

- [La Méthode Scientifique](#), France Culture, December 2018.
- [Ma thèse en 180 secondes](#), Université Paris-Est, finalist 2019.