CONSTANTIN PHILIPPENKO, PH.D.

Postdoctoral researcher at Inria Paris

🎓 Docteur en Mathématiques Appliquées de l'École polytechnique @ cphilippenko@gmail.com 📍 Paris, France

RESEARCH EXPERIENCES

Postdoctoral researcher
Inria Paris, DI ENS

📅 October 2023 – Ongoing   📍 Paris, France

👤 Under the supervision of Laurent Massoulié and Kevin Scaman

- Decentralized methods for unsupervized learning.
- Collaboration with CEA Saclay and the Cédric Gouy-Pailler's team.

Ph.D. student in Federated Learning
École polytechnique, CMAP Laboratory

📅 Dec 2019 – June 2023   📍 Palaiseau, France

👤 Under the supervision of Eric Moulines and Aymeric Dieuleveut

- Bidirectional compression for federated learning in heterogeneous setting.
- Collaboration with Accenture Labs in Sophia-Antipolis.
- Python   Pytorch   Linux   GPU

R&D Internship in machine learning
Forecsys

📅 May 2017 – Jul 2017   📍 Moscow, Russia

👤 Under the supervision of Vadim Strijov

- Algorithms for time series recognition based on machine learning.
- Python   Scikit-Learn   Linux

R&D Internship on polymers
Conservatoire national des arts et métier

📅 Spring 2015   📍 Paris, France

👤 Under the supervision of Cyrille Sollogoub

Research on the industrial use of polymers.

TEACHING EXPERIENCES

Lecturer at École polytechnique, Paris

Foundation of Machine Learning (MAP553)   📅 2023 (18h)
Optimization/Deep Learning (MAP545)   📅 2021-2023 (3x21 hours)
Probability (MAP361)   📅 2020-2021 (2x12h)
Linear Algrebra (MAP532)   📅 2022 (12h)

Lecturer at Emines, Ben Guerir

Supervising students during their "PFE"   📅 2022 (12h)

Remedial courses in Mathematics for Middle School

Lycée Stanislas   📅 2018-2023 (5x30 hours)

EDUCATION

École polytechnique
Ph.D. in Applied Mathematics.

📅 2019 – 2023   📍 Palaiseau, France

Distributed optimization, federated learning, compression, data heterogeneity.

Ensimag
Applied Mathematics, 3D Animation.

📅 2015 – 2018   📍 Grenoble, France

French engineering school "Grande École" in computer science and applied mathematics.

Moscow Institut of Physics and Technologies
Machine Learning, Statistiques.

📅 Spring 2017   📍 Moscow, Russia

Lycée Saint-Louis
Mathematics, Physics.

📅 2013 – 2015   📍 Paris, France

Preparatory classes for competitive entrance examinations to French "Grandes Écoles".

ASSOCIATIVE LIFE

Member of the French SMAI
Société de Mathématiques Appliquées et Industrielles, since 2020.

Doctoral students' delegate
CMAP Laboratory, 2021-2022

Congress of Applied Mathematics
President of the CJC-MA 2021 (*Congress of Young Researcher in Applied Mathematics*), École polytechnique, October 2021.

Phantasio - Theater company
President and Founder of a theater's company.

Water-Polo in competition
Nice, Grenoble, Moscou, Paris.

LANGUAGES

French
English
Russian
German

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INDUSTRIAL EXPERIENCES

ActivePivot Consultant
Global Market Solution

📅 Feb 2018 – Dec 2019   📍 London (UK) and Paris (France)

Development of informatics tools devoted to extract valuable information from massive volume of financial data.

Consultant at:
- Société Général, Jun 2019 – Nov 2019, Paris.
- HSBC, Oct 2018 – Jun 2019, London.
- ActiveViam, Feb - Jul 2018, London (Internship).

ActivePivot   Java   Maven   Spark   Spring   OLAP Cube

PUBLICATIONS

🖊 Constantin Philippenko and Aymeric Dieuleveut, Convergence rates for distributed, compressed and averaged least-square regression: application to Federated Learning, 2023, *Under review at JMLR*

🖊 Jean Ogier du Terrail et al., FLamby: Datasets and Benchmarks for Cross-Silo Federated Learning in Realistic Healthcare Settings, 2022, *Thirty-sixth Conference on Neural Information Processing Systems Datasets and Benchmarks Track*

🖊 Constantin Philippenko and Aymeric Dieuleveut, Preserved central model for faster bidirectional compression in distributed settings, 2021, *Advances in Neural Information Processing Systems, 34.*

🖊 Constantin Philippenko and Aymeric Dieuleveut, Artemis: tight convergence guarantees for bidirectional compression in Federated Learning, 2020, *arXiv: 2006.14591*

TALKS

Ph.D. defense, 18th september 2023.
Bidirectional compression for federated learning in a heterogeneous setting.
Jury: Mikael Johansson (President and Reviewer), Jérome Malick (Reviewer), Manon Costa, Robert Gower, Martin Jaggi, Kevin Scaman.

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Invited talks.
🎤 54èmes Journées de Statistique, organizers: Société Française de Statistique, Bruxelles (Belgique), July 2023

🎤 Reading group of the DYOGENE Inria's team, organizers: Kevin Scaman and Laurent Massoulié, Inria, Paris (France), December 2022

🎤 Learning and Optimization in Luminy, organizers: Alexandre d'Aspremont et al., CIRM, Marseille (France), October 2022

🎤 StatMathAppli, organizers: Christophe Giraud and Estelle Kuhn, Villa Clythia in Fréjus, France, August 2022

🎤 Math for Machine Learning Summer School, organizer: Eric Moulines et al., Emines-UM6P, Benguerrir (Morocco), July 2022

🎤 Advances in Neural Information Processing Systems, Online Talk, December 2021

🎤 Recent advances in machine learning and uncertainty, organizers: Josselin Garnier et al., CIRM, Marseille (France), June 2021

🎤 52èmes Journées de Statistique, organizers: Société Française de Statistique, Nice (France), June 2021

🎤 Misscausal Team at INRIA, organizer: Julie Josse, Paris (France), November 2020

🎤 SIMPAS Team at CMAP, organizers: Emmanuel Gobet and Erwan Le Pennec, Paris (France), November 2020

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Tutorials on federated learning.
🎤 Hi!Paris Reading group, organizers: Yohan Petetin, Hi!Paris, Paris (France), April and June 2023

AWARDS

🏆 Accesit given by the jury of the "2022 STIC Doctoral Prizes", Fall 2022.
Organisers: Labex DigiCosme, école doctorale STIC de l'Université Paris Saclay, école doctorale de l'Institut Polytechnique de Paris.