# Ievgen Redko

Associate professor at Hubert Curien Laboratory

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*Age: 31*


Associate professor with a PhD degree in Computer Science, 5 years of experience in the current position, a strong record of top-level publications in machine learning and artificial intelligence fields, scientific excellence rewards, numerous successful grant applications and broad range of teaching activities covering all levels of higher education.

## Education

Oct., 2012 – Sep., 2015 — **Paris Sorbonne Cité University (LIPN laboratory) - Paris, France**
**PhD student, Machine Learning and Applications team.**
**Topic**: Non-negative matrix factorization for unsupervised transfer learning
**Thesis advisor**: Younès Bennani
**PhD jury**: Patrick Gallinari (University Paris 6), Stéphane Canu (INSA Rouen), Marc Sebban (University Jean Monnet), Vincent Lemaire (Orange Labs)

Sep., 2011 – Aug., 2012 — **Ecole Centrale de Lyon - Ecully, France**
**Engineering cursus, Mathematics and Decision Making.**
- French government scholarship
- Internship at Soitec on software design

Sep., 2011 – Aug., 2012 — **NTUU "Igor Sikorsky Kyiv Polytechnic Institute" - Kyiv, Ukraine**
**Master's degree, Intelligent systems for Decision Making.**
- Government scholarship
- Average grade > 4.5/5

## Professional appointments

Sep., 2018 – present — **Hubert Curien Laboratory - Saint-Etienne, France**
**Associate professor, Data Intelligence team.**
Research in fundamental and applied machine learning.
- Transfer learning and domain adaptation
- Optimal transport in machine learning
- Applications to healthcare

Sep., 2016 – Aug., 2018 — **CREATIS Laboratory - Villeurbanne, France**
**Associate professor, Images and models team.**
Working on the application of machine learning to medical imaging.
- Epileptic lesion detection
- Prostate cancer mapping
- Brain decoding and neuroimaging (collaboration with Institut of Neuroscience of Timone)

Feb., 2016 – Aug., 2016 — **Hubert Curien Laboratory - Saint-Etienne, France**
**Post-doctoral fellow, Data Intelligence team.**
Multiview learning with interacting views - Collaboration with LIP6, LIF, Picxel, INT

## Publications

*Books*

2019 **Domain adaptation theory: available theoretical results**, *ISTE Press-Elsevier*, Ievgen Redko, Emilie Morvant, Amaury Habrard, Marc Sebban, Younès Bennani.

*Selected peer-reviewed conferences*

2020 **CO-Optimal Transport**, *Advances in Neural Information Processing Systems (**NeurIPS**)*, Ievgen Redko, Titouan Vayer, Rémi Flamary, Nicolas Courty.

**Margin-aware Adversarial Domain Adaptation with Optimal Transport**, *International conference on machine learning (**ICML**)*, Sofien Dhouib, Ievgen Redko, Carole Lartizien.

**A Swiss Army Knife for Minimax Optimal Transport**, *International conference on machine learning (**ICML**)*, Sofien Dhouib, Ievgen Redko, Tanguy Kerdoncuff, Rémi Emonet, Marc Sebban.

2019 **Optimal Transport for Multi-source Domain Adaptation under Target Shift**, *International Conference on Artificial Intelligence and Statistics (**AISTATS**)*, Ievgen Redko, Nicolas Courty, Rémi Flamary, Devis Tuia.

**On Fair Cost Sharing Games in Machine Learning**, *AAAI Conference on Artificial Intelligence (**AAAI**)*, Ievgen Redko, Charlotte Laclau.

2018 **Revisiting $(\epsilon, \gamma, \tau)$-similarity learning for domain adaptation**, *Advances in Neural Information Processing Systems (**NeurIPS**)*, Sofiane Dhouib, Ievgen Redko.

**Feature Selection for Unsupervised Domain Adaptation Using Optimal Transport**, *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (**ECML/PKDD**)*, Léo Gautheron, Ievgen Redko, Carole Lartizien.

**Cross-Lingual Document Retrieval Using Regularized Wasserstein Distance**, *European Conference on Information Retrieval (**ECIR**)*, Georgios Balikas, Charlotte Laclau, Ievgen Redko, Massih-Reza Amini.

**Population Averaging of Neuroimaging Data Using Lp Distance-based Optimal Transport**, *International Workshop on Pattern Recognition in Neuroimaging (**PRNI**)*, Qi Wang, Ievgen Redko, Sylvain Takerkart.

2017 **Co-clustering through Optimal Transport**, *International conference on machine learning (**ICML**)*, Charlotte Laclau, Ievgen Redko, Basarab Matei, Younès Bennani, Vincent Brault.

**Theoretical Analysis of Domain Adaptation with Optimal Transport**, *Joint European Conference on Machine Learning and Knowledge Discovery in Databases (**ECML/PKDD**)*, Ievgen Redko, Amaury Habrard, Marc Sebban.

*Journals*

2019 **On the analysis of adaptability in multi-source domain adaptation**, *Machine learning journal (**MLJ**)*, Ievgen Redko, Amaury Habrard, Marc Sebban.

2016 **Non-negative embedding for fully unsupervised domain adaptation**, *Pattern Recognition Letters (**PRL**)*, Ievgen Redko, Younès Bennani.

*Pre-prints*

2020 **A ridge regression approach for fast bilinear similarity learning with theoretical guarantees**, *submitted to Machine learning journal (**MLJ**)*, Sofien Dhouib, Ievgen Redko.

**POT: Python Optimal Transport**, *submitted to Journal of Machine Learning Research (**JMLR**)*, Rémi Flamary, Nicolas Courty, Alexandre Gramfort, Hicham Janati, Mokhtar Z. Alaya, Aurelie Boisbunon, Stanislas Chambon, Laetitia Chapel, Kilian Fatras, Titouan Vayer, Nemo Fournier, Nathalie Therese Helene Gayraud, Léo Gautheron, Ievgen Redko, Alain Rakotomamonjy, Antoine Rolet, Vivien Seguy, Antony Schutz, D.J. Sutherland, Romain Tavenard, Alexander Tong.

**Rank-one partitioning: formalization, illustrative examples, and a new cluster enhancing strategy**, *submitted to Pattern Recognition Letters (**PRL**)*, Charlotte Laclau, Franck Iutzeler, Ievgen Redko.

**Putting Theory to Work: From Learning Bounds to Meta-Learning Algorithms**, *submitted to International Conference on Learning Representations*, Quentin Bouniot, Ievgen Redko, Romaric Audigier, Angélique Loesch, Amaury Habrard.

**Deep Neural Networks Are Congestion Games: From Loss Landscape to Wardrop Equilibrium and Beyond**, *submitted to AISTATS*, Nina Vesseron, Ievgen Redko, Charlotte Laclau.

**All of the Fairness for Edge Prediction with Optimal Transport**, *submitted to AISTATS*, Charlotte Laclau, Ievgen Redko, Manvi Choudhary, Christine Largeron.

## Awards & Grants

*Awards*

2020 **Top reviewer**, *Advances in Neural Information Processing Systems (NeurIPS).*

**Top reviewer**, *International Conference on Machine Learning (ICML).*

2019 **Top reviewer**, *Advances in Neural Information Processing Systems (NeurIPS).*

2018 **Distinguished Program Committee member**, *International Joint Conferences on Artificial Intelligence (IJCAI).*

2014 **Best Poster Award**, *Summer School on Machine learning (EPAT)*, Bridge Convex Non-negative Matrix Factorisation for Unsupervised Transfer learning.

*Grants*

2020 **Grant holder within MANUTECH SLEIGHT Graduate School call**, *Machine Learning for High-Definition Bone Digital Twin*, Collaboration with CHU Saint-Etienne and Sainbiose laboratory.
Total: 123 000 euros

2019-2022 **Member of CNRS project DELICIO**, *Machine Learning and control theory for drone fleet control*, Collaboration with LIRIS, LAGEPP and ONERA laboratories.
Total: 509 000 euros

2019 **Member of "AI meets Design" project financed by UJM Foundation**, *Design of art objects with Generative Adversarial Networks*, Collaboration with ACCRA and CIEREC laboratories.
Total: 15 000 euros

2018 **Grant holder within NVIDIA's GPU grant call**.

2018-2021 **Grant holder within Janssen's call "Artificial Intelligence and Diseases"**, *Multi-Class Computer-Aided Diagnosis for Prostate Cancer Mapping*, Collaboration with LIG laboratory.
Total: 137 000 euros (cancelled due to the leave from CREATIS)

2017-2018 **Grant holder within CNRS Imag'In call**, *Multi-modal Imaging and Data Fusion*, Collaboration with Institut of Neuroscience of Timone.
Total: 27 000 euros

2017 **Grant holder within INS2I's Young Investigator call**, *Heterogeneous Medical Imaging through Optimal Transport*, Collaboration within CREATIS laboratory.
Total: 15 000 euros

2017-2022 **Member of CNRS project ARMONI**, *Fast Image Acquisition with Single-Pixel Camera*, Collaboration with CREATIS laboratory.
Total: 223 000 euros

## Research activities

*PhD students supervision*

Dec., 2019 – present **PhD student, CEA LIST**
**Few-shot learning for object detection and semantic segmentation**, *Quentin Bouinot.*
• Industrial PhD • Co-supervision with A. Habrard (Prof. UJM), R. Audigier (Researcher engineer CEA)

Sep., 2019 – present **PhD student, THALES**
**Anomaly detection with deep metric learning**, *Yevhenii Zotkin.*
• Industrial PhD • Co-supervision with Marc Sebban (Prof. UJM)

Sep., 2018 – present **PhD student, Physics lab, ENS de Lyon**
**Transfer learning on graphs**, *Yacouba Kaloga.*
• Co-supervision with P. Borgnat (Senior Researcher CNRS), A. Habrard (Prof. UJM)

Sep., 2017 – present **PhD student, CREATIS, INSA de Lyon**
**Provably accurate metric learning for heterogeneous medical imaging: application to multi-view learning and domain adaptation**, *Sofiane Dhouib.*
• Ministry scholarship • Co-supervision with Carole Lartizien (Senior Researcher CNRS)

*Master's students supervision*

2020 **Game theory and neural networks**, *Nina Vesseron*, ENS de Lyon, M1 student.

**AI and creativity for design**, *Deepakumar Moorthy*, University Jean Monnet, M1 student.

2019 **Machine learning for bone porosity estimation**, *Robin Khatri*, University Jean Monnet, M1 student.

2018 **Machine learning for single-pixel camera**, *Sixian Xu*, TELECOM Saint-Etienne, M2 student.

2017 **Optimal transport for prostate cancer mapping**, *Léo Gautheron*, University Jean Monnet, M2 student.

**Multi-view learning for epilepsy lesion detection**, *Dimitrios Tsolakidis*, University Jean Monnet, M1 student.

*Community service*

2021 **Machine Learning Summer School**, *Organization committee*, Invited speakers: Silvia Chiappa (DeepMind), Nicolas Courty (University of Bretagne-Sud), Joan Bruna (Courant Institute), Lorenzo Rosasco (University of Genoa), Emilie Kaufmann (Inria).

2020 **NewInML@NeurIPS workshop**, *Mentor*.

**Metalearn@NeurIPS workshop**, *Senior reviewer*, Mentoring junior reviewers.

2019 **NewInMLNeurIPS workshop**, *Reviewer*.

2017-2020 **French Conference on Machine Learning**, *Program committee*, Organization committee in 2020.

2017-2020 **NeurIPS'17,'19,'20, ICML'16,'20, IJCAI'18,'19**, *Reviewer*.

2016-2020 **Annals of Statistics, JMLR, TKDE, Neurocomputing, Pattern recognition, KAIS**, *External reviewer*.

## Invited talks

2019 **Tutorial on Transfer Learning and Optimal Transport**, *SciDoLySE (Science des Données à Lyon et Saint-Etienne)*, Saint-Etienne, France.
Joint seminar with Filippo Santambrogio

**Optimal transport for domain adaptation with real-world applications**, *Workshop on Optimal Transport in Machine Learning and Signal Processing*, Paris, France.
Invited speaker with Gabriel Peyré, Nicolas Papadakis

**Tutorial on Optimal Transport**, *Seminar on Optimal Transport*, Univ. of Angers, France.
Joint seminar with Nicolas Courty

2018 **Machine learning and medical imaging with heterogeneous data**, *ATLAS workshop on machine learning and statistics for medical data*, Grenoble, France.

**Feature Selection for Interpretable Domain Adaptation**, *Workshop on Machine Learning and Explainability*, Orléans, France.

**Machine Learning through Optimal Transport**, *International Francophone Conference on Data Science*, Tanger, Morocco.

2017 **Learning bounds and co-clustering**, *NAVER Labs*, Grenoble, France.

**Optimal transport and co-clustering**, *Institut of Mathematics*, Marseille, France.

## Teaching activities

May., 2019 — **Erasmus+ visiting lecturer**, *KU Leuven*, Declarative Languages and Artificial Intelligence (DTAI) group.

- **Tutorial on transfer learning**: seminar for DTAI group's staff
- **Introduction to machine learning**: lecture for 2nd year Bachelor's degree students
- **Basics of smooth constrained optimisation**: seminar for PhD students of DTAI group
- **Common reviewing practices**: seminar at DTAI group

2018 – present — **Machine learning and Data Mining Master's program**, *University Jean Monnet*.

- **Advanced Machine Learning**: lectures on Transfer Learning and Optimal Transport
- **Optimization and Operations Research**: basics of convex constrained smooth optimization
- **Data Analysis**: introduction to statistical analysis of data
- **Intro to Machine Learning**: decision trees, random forests, neural networks and more
- **Research methodology**: lectures on writing grant proposals and best reviewing practices

**Bachelor's degree level**, *University Jean Monnet*.

- **Web development II**: advanced web applications development
- **Numerical tools**: basics of the computer science

2016 – 2018 — **Bachelor's degree level**, *INSA Lyon*.

- **Algorithms and software development I,II**: introduction to Java & Java apps development
- **Engineering project**: development of an applied project with sensors data

2012 – 2015 — **Computer science Master's program**, *University Sorbonne Paris North*.

- **Artificial neural networks**: introduction to neural networks
- **Matrix analysis for Data Mining**: matrix factorization for advanced data analysis

**Bachelor's degree level**, *University Sorbonne Paris North*.

- **Data visualization**: data visualization tools for data mining
- **Architecture and operational systems**: introduction to low-level programming
- **Imperative programming**: introduction to algorithmics with C/C++
- **Software engineering**: best practices of organizing software developement process

## Miscellaneous activities

- Writer of scientific vulgarisation articles on Medium/Towards Data Science
  - `https://medium.com/@ievred`
- #3 contributor to Python Optimal Transport toolbox (∼5K downloads/month)
  - `https://github.com/PythonOT/POT/graphs/contributors`
- Chess player, rock climber.