Romain Lopez

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Education

2016 – **Ph.D. candidate in Electrical Engineering and Computer Sciences**
University of California, Berkeley, USA
affiliations: Berkeley Artificial Intelligence Research, Center for Computational Biology
advisor: Michael I. Jordan & Nir Yosef

2016 **Diplome d'Ingénieur**
École polytechnique, France
affiliations: Centre de Mathématiques Appliquées
advisors: Laurent Massoulié & Erwan Le Pennec

Awards & fellowships

2019 Best Student Poster Award. ICML Computational Biology Workshop

2016 William Oldham Fellowship, UC Berkeley

2016 Fulbright-France Fellowship, Monahan Foundation

2016 Carnot Foundation Fellowship, annually awarded to 2 students from École polytechnique

2015 Outstanding Investment Medal, École polytechnique awarded annually to 10% of students for their dedication to the student body.

2014 French National Defence Medal, Bronze Echelon, Army expeditionary troops

Publications

Journal articles

Romain Lopez, Jeffrey Regier, Michael B. Cole, Michael I. Jordan, and Nir Yosef. "Deep generative modeling for single-cell transcriptomics". In: *Nature Methods* (2018). [PDF]

Samuel L. Wolock, **Romain Lopez**, and Allon M. Klein. "Scrublet: computational identification of cell doublets in single-cell transcriptomic data". In: *Cell Systems* (2019). [PDF]

Articles in highly selective conference proceedings

Romain Lopez, Jeffrey Regier, Michael I. Jordan, and Nir Yosef. "Information Constraints on Auto-Encoding Variational Bayes". In: *Advances in Neural Information Processing Systems* (2018). [PDF]

Manuscripts in submission

Pierre Boyeau, **Romain Lopez**, Jeffrey Regier, Adam Gayoso, Michael I. Jordan, and Nir Yosef. "Deep Generative Models for Detecting Differential Expression in Single Cells". In: *Submitted* (2019). [PDF]

Oscar Clivio, **Romain Lopez**, Jeffrey Regier, Adam Gayoso, Michael I. Jordan, and Nir Yosef. "Detecting Zero-Inflated Genes in Single-Cell Transcriptomics Data". In: *Submitted* (2019). [PDF]

Adam Gayoso, **Romain Lopez**, Zoe Steier, Jeffrey Regier, Aaron Streets, and Nir Yosef. "A Joint Model of RNA Expression and Surface Protein Abundance in Single Cells". In: *Submitted* (2019). [PDF]

Romain Lopez, Adam Gayoso, and Nir Yosef. "Enhancing Scientific Discoveries in Molecular Biology with Deep Generative Models". In: *Submitted* (2019).

Romain Lopez, Chenchen Li, Xiang Yan, Junwu Xiong, Michael I. Jordan, Yuan Qi, and Le Song. "Cost-Effective Incentive Allocation via Structured Counterfactual Inference". In: *Submitted* (2019). [PDF]

Chenling Xu*, **Romain Lopez***, Edouard Mehlman*, Jeffrey Regier, Michael I. Jordan, and Nir Yosef. "Probabilistic Harmonization and Annotation of Single-cell Transcriptomics data with Deep Generative Models". In: *Submitted* (2019). [PDF]

Refereed workshop papers

Romain Lopez*, Achille Nazaret*, Maxime Langevin*, Jules Samaran*, Jeffrey Regier*, Michael I Jordan, and Nir Yosef. "A joint model of unpaired data from scRNA-seq and spatial transcriptomics for imputing missing gene expression measurements". In: *ICML Workshop in Computational Biology,* ***Spotlight talk, Best student poster award*** (2019). [PDF]

Maxime Langevin, Edouard Mehlman, Jeffrey Regier, **Romain Lopez**, Michael I. Jordan, and Nir Yosef. "A Deep Generative Model for Semi-Supervised Classification with Noisy Labels". In: *Bay Area Machine Learning Symposium,* ***Oral presentation*** (2018). [PDF]

Romain Lopez, Jeffrey Regier, Michael I. Jordan, and Nir Yosef. "A deep generative model for gene expression profiles from single-cell RNA sequencing with application to differential expression". In: *NeurIPS Machine Learning workshop in Computational Biology,* ***Spotlight talk*** *and Bay Area Machine Learning Symposium,* ***Oral presentation*** (2017). [PDF]

Presentations

Invited talks

Nov 2019	Broad Institute of MIT and Harvard, seminar
Nov 2019	Dana Farber Cancer Institute, seminar
Nov 2019	Celsius Therapeutics, seminar
Nov 2019	Pfizer, seminar
Oct 2019	Google Brain, seminar
March 2019	Deep Learning for Biomedicine, UCSF
Oct 2018	Northern California Computational Biology Symposium
Nov 2017	CS294@UC Berkeley, Machine learning and statistics meet biology, guest speaker
Oct 2017	Northern California Computational Biology Symposium
Feb 2017	Two Sigma Investments, seminar on stochastic optimization

Contributed talks

June 2019	ICML workshop in Computational Biology
Dec 2017	NeurIPS Machine Learning workshop in Computational Biology
Oct 2017	Bay Area Machine Learning Symposium

Posters

Sept 2019	Single-cell Genomics conference
Jun 2019	UC-wide AI in Biomedicine Symposium
Oct 2018	Single-cell Genomics conference
March 2018	Single-cell Biology conference

Teaching experience

Electrical Engineering 127 / 227A, University of California, Berkeley
Advanced undergraduate and graduate course in convex optimization.
Head Graduate Student Instructor. Spring 2018.
Graduate Student Instructor. Fall 2019.

Academic appointments

April 2016 –Aug 2016 Harvard Medical School, *Visiting Research Fellow, Boston.*
Hosted by Allon Klein. Understanding cell fate decisions based on statistical methods for analyzing single-cell RNA sequencing data. Artifacts detection for single-cell transcriptomics data.

Industry experience

Sept 2019 –Dec 2019 — Amazon, *Applied Scientist Intern, Berkeley.*
Hosted by Inderjit Dhillon. Research on search algorithms for Amazon online platform.

June 2018 –Aug 2018 — Ant Financial Services Group, *Research-based Software Engineer Intern, Hangzhou.*
Hosted by Le Song. Research on counterfactual inference for estimating responses to economical incentives. Application to efficient coupon allocation for mobile marketing campaigns.

Sept 2015 –Feb 2016 — Cardiologs, *Data Scientist Intern, Paris.*
Hosted by Jia Li, Co-founder & CSO. Cardiologs develops a FDA-cleared AI based EKG analysis software and raised 6.4 M$ in 2017. Reconstructed EKGs 3D signal from a 2D projection using convolutional neural networks and Theano.

June 2015 –Aug 2015 — AXA Life Japan, *Actuarial Intern, Tokyo*
Hosted by Takashi Nojima, Head of Pricing and Product development. AXA Life Japan was the second most important subsidiary of AXA group regarding medical insurance in 2015. Predictive modeling, pricing sheets, stress tests and technical reports.

Journal & conference reviewing

Machine Learning in Computational Biology (MLCB), 2019

International Conference on Machine Learning (ICML), 2019

Neural Information Processing Systems (NeurIPS), 2019

Nature Methods, 2019

University & national service

May 2018 –Aug 2019 — Yosef Lab, UC Berkeley, *Intern Recruiting and Mentoring.*
Recruitment and mentoring of visiting students in the Yosef Lab working on their master's thesis. Designed screening exams, conducted interviews, provided projects and organized regular working group with students.

Maxime Langevin, 2018, **Best Research Award from École polytechnique**.
Edouard Mehlman, 2018.
Jules Samaran, 2018.
Achille Nazaret, 2019, **Best Student Poster Award, ICML Comp. Bio. workshop**.
Oscar Clivio, 2019.
Gabriel Misrachi, 2019.
Pierre Boyeau, 2019.

Sept 2017 –Aug 2019 — French Alumni Berkeley, *Founder.*
Connecting Berkeley students that share a part of their education in France with Alumni. Organized monthly meetings with startups in San Francisco, bi-monthly networking events on campus. Collaboration with the French consulate, industry and diverse associations.

Oct 2014 –Jul 2015 — Freshman Weekend of École polytechnique, *Treasurer & Vice-President.*
In charge of the $160k budget and co-organising the event for 600 students.

Oct 2013 –Apr 2014 — French Ministry of Defence, *Officer Cadet, Reunion Island, Indian Ocean*
Military training for underprivileged youth towards the job market. Supervised the military recruit training of thirty people and their five supervisors.

Press

"scVI with Romain Lopez and Gabriel Misrachi". In: *The Bioinformatics Chat* (Sept 2019).

"Hyperparameter search for scVI". In: *YosefLab Blog* (July 2019).

"Deep generative modeling for single-cell transcriptomics, Fabian Theis". In: *F1000Prime Recommendation (Exceptional)* (July 2019).

"Should we zero-inflate scVI?" In: *YosefLab Blog* (June 2019).

"Building Gene Expression Atlases with Deep Generative Models for Single-cell Transcriptomics". In: *Berkeley Artificial Intelligence Research Blog* (Dec 2018).

"Bayesian deep learning for single-cell analysis". In: *Nature Methods* (Nov 2018).

"Integrating scRNA-seq and spatial STARmap data from mouse frontal cortex with scVI". In: *What Do You Mean "Heterogeneity"?* (Oct 2018).

"Count based autoencoders and the future for scRNA-seq analysis". In: *What Do You Mean "Heterogeneity"?* (Apr 2018).