Laurent Charlin

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EDUCATION

Ph.D. – Computer Science, University of Toronto 2007–2014
Thesis : "Supervised and Active Learning for Recommender Systems"
Committee : Richard Zemel (co-advisor), Craig Boutilier (co-advisor), Geoffrey Hinton, Sheila McIlraith

Master of Mathematics (M.Math.) – Computer Science, University of Waterloo 2005–2007
Thesis : "Automated Hierarchy Discovery for Planning in Partially Observable Domains"
Committee : Pascal Poupart (advisor), Romy Shioda, Shai Ben-David

Bachelor (B.Eng.) – Computer Engineering, École Polytechnique de Montréal 1999–2004

PROFESSIONAL EMPLOYMENT

Assistant professor, HEC Montréal 2016–...
Department of Decision Sciences

Adjunct professor, Department of Computer Science and Operations Research (Université de Montréal)
Member of Montreal Institute for Learning Algorithms (Mila)
Co-Academic Director NextAI Montréal (since 2018)
ElementAI Fellow (since 2017)

Postdoctoral fellow, Mcgill University July 2015–2016
Advisor : Professor Joelle Pineau
School of Computer Science

Postdoctoral researcher, Princeton & Columbia University November 2013–2015
Advisor : Professor David Blei
School of Computer Science and Data Science Institute

PUBLICATIONS (GOOGLE H-INDEX : 16)

Papers in preparation

1. Caccia, M., Caccia, L., Fedus, W., Pineau, J., **Charlin, L.** (2018) Language Gans Falling short. arXiv :1811.02549.

2. Wang, Y., Liang, D., **Charlin, L.**, Blei, D. (2018) The Deconfounded Recommender : A Causal Inference Approach to Recommendation. arXiv :1808.06581.

Journal Papers

3. Serban, I.V., Lowe, R., **Charlin, L.**, Pineau, J. (2018) *A Survey of Available Corpora For Building Data-Driven Dialogue Systems*. *Dialogue and Discourse*

4. Lowe, R., Pow, P., Serban, I.V., **Charlin, L.**, Liu, C., Pineau, J., (2017) Training End-to-End Dialogue Systems with the Ubuntu Dialogue Corpus. *Dialogue and Discourse*

Conference Papers

5. Song, W., Xiao, Z., Wang, Y., **Charlin, L.**, Zhang, M., Tang, J. (2019) Session-based Social Recommendation via Dynamic Graph Attention Network. *ACM International Conference on Web Search and Data Mining (WSDM).*

6. Li, R., Hannes, S., Kahou, S., Michalski, V., **Charlin, L.**, Pal, C. (2018) Towards Deep Conversational Recommendations. *Neural Information Processing Systems (NeurIPS).*

7. Ke, N.R., Żołna, K., Sordoni, A., Lin, Z., Trischler, A., Bengio, Y., Pineau, J., **Charlin, L.**, Pal, C. (2018) Focused Hierarchical RNNs for Conditional Sequence Processing. *International Conference of Machine Learning (ICML).*

8. Serban, I.V., Sordoni, A., Lowe, R., **Charlin, L.**, Pineau, J., Courville, A., Bengio, Y. (2017) A Hierarchical Latent Variable Encoder-Decoder Model for Generating Dialogues. *Association for the Advancement of Artificial Intelligence (AAAI).*

9. Smith, M., **Charlin, L.**, J. Pineau. (2017) A Sparse Probabalistic Model of User Preference Data. *Canadian AI.*

10. Liu, C., Lowe, R., Serban, I.V., Noseworthy, M., **Charlin, L.**, Pineau, J. (2016) How NOT To Evaluate Your Dialogue System : An Empirical Study of Unsupervised Evaluation Metrics for Dialogue Response Generation. *Empirical Methods in Natural Language Processing (EMNLP).*

11. Liang, D., Altosaar, J., **Charlin, L.**, Blei, D.M. (2016) Factorization Meets the Item Embedding : Matrix Factorization with Item Co-occurrence. *ACM Conference on Recommender Systems (RecSys).*

12. Liang, D., **Charlin, L.**, McInerney, J., Blei, D.M. (2015) *Modeling User Exposure in Recommendation*, *World Wide Web Conference (WWW).*

13. **Charlin, L.**, McInerney, J., Ranganath, R., Blei, D.M. (2015) Dynamic Poisson Factorization. *ACM Conference on Recommender Systems (RecSys).*

14. Ranganath, R., Tang, L., **Charlin, L.**, Blei, D.M. (2015) Deep exponential families. *International Conference on Artificial Intelligence and Statistics (AISTATS).*

15. Gopalan, P., **Charlin, L.**, Blei, D.M. (2014) Content-based recommendations with Poisson factorization. *Neural Information Processing Systems (NIPS).*

16. **Charlin, L.**, Zemel, R., Larochelle, H. (2014) Leveraging User Libraries to Bootstrap Collaborative Filtering. *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD).*

17. Tarlow, D., Swersky, K., **Charlin, L.**, Sutskever, I., Zemel, R. (2013) Stochastic k-Neighborhood Selection for Supervised and Unsupervised Learning. *International Conference of Machine Learning (ICML).*

18. **Charlin, L.**, Zemel, R., Boutilier, C. (2012) Active Learning for Matching Problems. *International Conference of Machine Learning (ICML).*

19. **Charlin, L.**, Zemel, R., Boutilier, C. (2011) A Framework for Optimizing Paper Matching. *Uncertainty in Artificial Intelligence (UAI).*

20. Toussaint, M., **Charlin, L.**, Poupart, P. (2008) Hierarchical POMDP Controller Optimization by Likelihood Maximization. *Uncertainty in Artificial Intelligence (UAI)*.

21. **Charlin, L.**, Poupart, P., and Shioda, R. (2007) Automated Hierarchy Discovery for Planning in Partially Observable Domains. *Neural Information Processing Systems (NIPS)*.

Workshop papers

23. **Charlin, L.** and Zemel, R. (2013) The Toronto Paper Matching System : An automated paper-reviewer assignment system. Workshop *Peer Reviewing and Publishing Models (PEER) in the International Conference of Machine Learning*.

24. **Charlin, L.,**, Zemel, R., Larochelle, H. (2013) Leveraging user libraries to bootstrap collaborative filtering. Workshop *What Difference Does Personalization Make ?, Neural Information Processing Systems (NIPS)*.

25. Toussaint, M., **Charlin, L.**, Poupart, P. (2008) Hierarchical POMDP Controller Optimization by Likelihood Maximization. Workshop *Advancements in POMDP Solvers, Association for the Advancement of Artificial Intelligence (AAAI)*.

Technical Reports

26. Beg, M., **Charlin, L.** and So, J. (2006) MAXSM : A MultiHeuristic Approach to XML Schema Matching. *University of Waterloo Technical Report*. CS-2006-47.

27. **Charlin, L.**, Zhang, L., and Peyrat J. (2004) 2D/3D Compactness using a growing kernel, *Siemens Corporate Research Technical Report.*

28. **Charlin, L.**, and Zhang, L. (2004) Pulmonary Ground Glass Nodules Growth Correlation, *Siemens Corporate Research Technical Report.*

29. **Charlin, L.** (2004) AdaBoost and Learning Algorithms : An Introduction, *IEEE Looking.forward*. 11 : 18-23.

Patents

30. **Charlin, L.**, Zhang, L., and Peyrat J. (2007). Method and System for Determining Compactness of an Object. USPTO #20070206864.
31. **Charlin, L.**, and Zhang, L. (2006) System and method for characterizing 2-dimensional shapes by compactness measurements. USPTO #20060110048 and WO/2006/044988.

GRANTS

Exploiting ML/OR Synergies for Assortment Optimization and Recommender Systems (PI), IVADO Fundamental Research Funding Program, $157,400 2018–2020

Learning representations of uncertainty for decision making processes (Co-PI), IVADO Fundamental Research Funding Program, $200,000 2018–2020

Machine Learning for (Discrete) Optimization (Co-PI), IVADO Fundamental Research Funding Program, $195,000 2018–2020

Data analytics methods for travel time estimation in transportation engineering (Co-PI), IVADO Fundamental Research Funding Program, $150,000 2018–2020

Matching individuals to review tasks based on topical expertise level (Co-PI), IVADO Fundamental Research Funding Program, $150,000 2018–2020

Improving the prediction of the emotional and cognitive experience of users (UX) in interaction with technology using deep learning (Co-PI), IVADO Fundamental Research Funding Program, $200,000 2018–2020

Using machine learning to uncover how broadcaster-generated post content is associated with user-generated content and revenue measures (Co-PI), IVADO Fundamental Research Funding Program, $195,000 2018–2020

Life-Long Machine Learning for Recommender Systems (PI), NSERC Discovery, $140,000 ($28,000/year) 2017–2021

Dialogue-based recommender systems, FRQNT Nouveaux Chercheur (PI)s, $47,000 2017–2019

Deep learning for the next generation of recommender systems (PI), Google Focused Award, $375,000 2017–2019

Next Generation Deep Learning (co-PI), sponsored by Samsung Electronics, $120,000 2017–2019

HEC Montréal, Startup-fund, $20,000 2016–2017

PRIZES AND SCHOLARSHIPS

Ray Reiter Graduate Award (University of Toronto), 500$ 2012

Doctoral Completion Award (University of Toronto), 10,000$ 2012

Alexander Graham Bell Canada Graduate Scholarships, 70,000$ 2009–2011

Doctoral Research Scholarship, Quebec Natural Sciences and Technology, 20,000$ (declined) 2009

Ontario Graduate Scholarship in Science and Technology (OGSST), 15,000$ 2008–2009

Best paper award runner-up, Uncertainty in Artificial Intelligence conference (UAI) 2008
2nd out of 256 submissions

Ontario Graduate Scholarship (OGS), 15,000$ 2007–2008

Mary H. Beatty Fellowship (University of Toronto), 2,000$ 2007–2008

Helen Sawyer Hogg Graduate Admission Award (University of Toronto), 8,000$ 2007–2008

President's Scholarship (University of Waterloo), 15,000$ (declined) 2007

Faculty of Mathematics Graduate Scholarship (University of Waterloo), 5,000$ 2006

Best undergraduate thesis, École Polytechnique (prize awarded by the IEEE) 2004

Industrial work experiences

Intern Software Engineer, Google, Mountain View, CA	February–May 2007
Research Intern, Siemens Corporate Research, Princeton, NJ	June–December. 2004
Research intern, Siemens Corporate Research, Princeton, NJ	Fall 2003

Student and Postdoc Supervision

Current Students

David Berger, Ph.D.	Fall 2018-...
Nicholas Vachon, M.Sc.	Summer 2018-...
Mohamad Elmasri, Postdoc (co-supervised)	Summer 2018-...
Cem Sübakan, Postdoc	Summer 2018-...
Maxime Gasse, Postdoc (co-supervised)	Winter 2018-...
Raymond Li, M.Sc. (co-supervised)	Fall 2017-...
François-Xavier Devailly, Ph.D., (co-supervised)	Fall 2017-...
Rosemary Ke Nan, Ph.D. (co-supervised)	Fall 2016-...
Massimo Caccia, Ph.D.	Fall 2016-...

Completed Students

Chin-Wei Huang, internship	Winter 2017
Hanif Jetha, internship	Summer 2016
Supervision of two undergraduate students for a project course, McGill University	Fall 2015
Supervision of two master's students for a project course, Columbia University	Fall 2014

Thesis Committees

Victoire Louis, HEC Montréal, M. Sc.	2018
Camille Desroches, HEC Montréal, M. Sc.	2017
Hugo Palmer, Polytechnique Montréal, M. Sc.	2016
Jean-François Bégin, HEC Montréal, Ph.D.	2016

Toronto Paper Matching System (TPMS)

Professor Richard Zemel and I have conceived and developed a system to help match reviewers to submitted papers. The system has been used over the last 7 years by the largest machine learning and computer vision conferences. In total it has matched over 20 000 reviewers to 30 000 submissions.

http://torontopapermatching.org/

Teaching

Machine Learning for Large-Scale Data Analysis and Decision Making, 80-629, HEC Montréal	Fall 2018

Machine Learning for Large-Scale Data Analysis and Decision Making, 80-629, HEC Montréal Fall 2017

Statistics, 1-620, HEC Montréal Winter 2017

Multivariate Analysis, 6-602, HEC Montréal Fall 2016, 2017

Tutorial on recommender systems, COS424, Princeton University March 2014

Teaching assistant, University of Toronto 2007–2012
- Introduction to machine learning (CSC2515)
- Data Structures (CSC263H)
- Computer Architecture (CSC258)
- Computer Science and Society (CSC300)
- Software Tools and UNIX Programming (CSC209)
- Introduction to Computer Science (CSC148)

Teaching assistant, University of Waterloo 2005–2007
- Introduction to artificial intelligence (CS486/686 two semesters)
- Statistical Learning Theory (CS498 / 698)
- Principles of programming (CS132)
- Introduction to software engineering (CS126)

Teaching assistant, École Polytechnique Montréal, Montréal Winter 2004
- Databases (INF4700)

OTHER ACADEMIC CONTRIBUTIONS

Invited Presentations

"Artificial Intelligence, Machine Learning, and Deep Learning"
- Fintech Rendez-Vous (Plenary), Montréal February 2019
- Open Apereo 2018 (Keynote), Montréal June 2018

"Deep Learning & Statistics"
- Epidemiology, Biostatistics and Occupational Health Department, McGill University, Montréal January 2019
- Statistical Society of Canada 2018, Montréal June 2018

"Machine Learning and Generative Models"
- CRIM, Montréal February 2017

"Graphical models for analyzing and understanding user behaviour"
- Ecole Polytechnique Montréal October 2016

"User Modelling"
- RecProfil workshop at RecSys'16, Boston September 2016

"Matrix factorization models for recommender systems"

Twitter, Boston — June 2016

"Recommender systems : going beyond matrix factorization"

Séminaire WeST, École Polytechnique Montréal — April 2015

Bloomberg L.P., New York City — March 2015

LabRL Seminar, McGill University — March 2015

"Automating reviewer to paper matching"

Centre de Recherche sur les Environnements Intelligents (CREI), Université de Sherbrooke — February 2013

"Hierarchical POMDP Controller Optimization by Likelihood Maximization"

AdaComp Seminar, National University of Singapore (NUS) — November 2008

Reinforcement Learning Seminar, McGill University — November 2008

"Automated Hierarchy Discovery for Planning in Partially Observable Environments"

Machine Learning Seminar, TU-Berlin, Germany — July 2007

McGill University - UdeM - MITACS Machine Learning Seminars — May 2007

COGS Brown Bag Brunch Seminars, University of Toronto — January 2007

"Experiences from Siemens", AI seminar, University of Waterloo — November 2004

Program committee (PC)

Senior PC member, Association for the Advancement of Artificial Intelligence (AAAI)	2017
ACM Web Search and Data Mining (WSDM)	2015
Uncertainty in Artificial Intelligence conference (UAI)	2012–2014
Workflow manager at Neural Information Processing Systems (NIPS)	2010

Reviewing duties

WWW Conference	2018
AI and Statistics Conference (AISTATS)	2017
International Conference on Learning Representations (ICLR)	2016, 2018
Journal of Operations Research	2015
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)	2015–2016
IEEE Transactions on Knowledge and Data Engineering (TKDE)	2015
International Conference on Machine Learning (ICML)	2012–2017
Neural Information Processing Systems conference (NIPS)	2013–2017
IEEE International Conference on Big Data	2013
Journal of Machine Learning Research	auxiliary 2012
Electronic Commerce conference (EC)	auxiliary 2012
International Journal of Approximate Reasoning	2012

International Conference on Autonomous Agents and Multiagent Systems	auxiliary 2011
IEEE Transactions on Systems, Man, and Cybernetics	2009, 2012

Consulting

ElementAI	2017-...
Thirdshelf	2016–2017
Delve Labs	2015–2016

Popular press

"Artificial Intelligence", *Gestion Magazine*	Spring 2017
"Computer Says No : the challenge to improve online dating", *UofT Magazine*	Summer 2012