Natasha Jaques

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CURRENT ROLES

University of Washington, Assistant Professor — Seattle, USA
Principal Investigator of the Social Reinforcement Learning lab — 2024-present
https://socialrl.cs.washington.edu/

Google DeepMind, Senior Research Scientist — Seattle, USA
Manager: Joel Leibo — 2023-present

EDUCATION

Ph.D. Media Arts and Sciences — 2014-2019
Massachusetts Institute of Technology, GPA: 5.0

M.Sc. Computer Science — 2012-2014
University of British Columbia, GPA: 94.7%

B.Sc. Computer Science — 2007-2012
University of Regina, GPA: 92.8%

B.A. Psychology — 2007-2012
University of Regina, GPA: 92.0%

AWARDS

Merit awards:

- 2021 Outstanding PhD Dissertation Award from the Association for the Advancement of Affective Computing (AAAC)
- 2019 Rising Stars in EECS Pitch Competition Winner, Computer Science
- 2017 Campion College Centennial Alumni of Distinction Award
- 2012 S.E. Stewart Award for the highest GPA in an Arts degree

Best paper awards:

- 2023 Best Paper at the AAAI Representation Learning for Responsible Human-Centric AI workshop

- 2021 Best of IEEE Transactions on Affective Computing Paper Collection
- 2020 Best Paper at the NeurIPS Cooperative AI workshop
- 2019 Best Paper Honourable Mention at the International Conference on Machine Learning (ICML)
- 2019 Best Paper Nominee at the NeurIPS Conversational AI workshop
- 2016 Best Demo at Neural Information Processing Systems (NeurIPS)
- 2016 Best Paper at the NeurIPS Machine Learning for Healthcare Workshop

Grants:

- 2024 Amazon Science Gift Hub, "Adversarial Object Generation for Robust Manipulation", $100,000.
- 2023 Cooperative AI Foundation, "Cooperation and Negotiation in Large Language Models", $200,000.
- 2021 C3.ai Digital Transformation Institute AI for Energy and Climate Security Awards, "Offline Reinforcement Learning for Energy-Efficient Power Grids", $210,000.

Scholarships:

- 2014 NSERC Doctoral Postgraduate Fellowship
- 2014 Robert Wood Johnson Foundation Wellbeing Fellowship
- 2013 Microsoft Research Graduate Women's Scholarship
- 2013 UBC Affiliated Fellowships Scholarship
- 2012 UBC CS Merit Scholarship
- 2012 NSERC Canadian Graduate Scholarship
- 2012 ISM Canada IT Futures Scholarship
- 2011 Shell Canada Scholarship in Computer Science
- 2011 Faculty of Science Supplemental Instruction Scholar Award
- 2010 John & Jack Spencer Gordon Middleton Scholarship
- 2007-2012 Academic Gold Scholarship

PAST RESEARCH AND WORK EXPERIENCE

Google Brain, Senior Research Scientist — Mountain View, USA
Managers: Douglas Eck, Aleksandra Faust — 2020-2023

UC Berkeley, Postdoctoral Visiting Scholar — Berkeley, USA
Advisor: Sergey Levine — 2020-2022

MIT Media Lab, PhD Candidate — Boston, USA
Advisor: Rosalind Picard — 2014-2019

DeepMind, Research Scientist Intern — London, UK
Advisor: Nando de Freitas — 2018

Google Brain, Research Scientist Intern — San Francisco, USA
Advisor: Douglas Eck — 2016, 2017

Microsoft, Program Manager Intern — Redmond, USA
Manager: Brian Jack — 2014

University of British Columbia, Masters Student — Vancouver, Canada
Advisor: Cristina Conati — 2012-2014

University of Regina, Honours Undergraduate Student — Regina, Canada
Advisors: David Gerhard, Howard Hamilton — 2007-2012

INVITED TALKS AND PANELS

- Reinforcement Learning Conference (RLC) Safety Workshop, Virtual, June 2024
- National Security Institute Cyber and Tech Center's "Unleashing Innovation: Navigating Game Changing Technologies" podcast, Generative AI episode, Virtual, June 2024
- Barcelona AI Safety Research Group, Virtual, May 2024
- AI Tea Talk Singapore, Virtual, April 2024
- NeurIPS Melting Pot Contest Panel, Virtual, December 2023
- Cooperative AI Foundation Retreat, Virtual, July 2023
- NeurIPS Deep RL Workshop Opinion talk, Virtual, December 2022
- NeurIPS Deep RL Workshop Panel, Virtual, December 2022
- Google Discoveries and Mysteries, Mountain View, USA, October 2022
- Absolutely Interdisciplinary, Virtual, June 2022

- AI4Good Lab, Virtual, June 2022
- Social Alignment in Humans and Machines workshop at RLDM, Virtual, June 2022
- Artificial Social Intelligence workshop at CVPR, Virtual, June 2022
- Adaptive Learning Agents workshop at AAMAS, Virtual, May 2022
- Emergent Communication: New Frontiers workshop at ICLR, Virtual, April 2022
- Agent Learning in Open-Endedness workshop at ICLR, Virtual, April 2022
- EmTech Digital, MIT Technology Review's AI Conference, Cambridge, USA, March 2022
- Human-Centric Self-Supervised Learning workshop at AAAI, Virtual, March 2022
- UCLA Institute for Pure and Applied Mathematics (IPAM) Mathematics of Intelligence workshop, Virtual, February 2022
- Stanford Intelligent Systems Lab, Virtual, January 2022
- NeurIPS Political Economy of Reinforcement Learning (PERLS) workshop (Panelist), Virtual, December 2021
- UC Berkeley Artificial Intelligence Research Lab BAIR/CPAR/BDD Seminar, Virtual, November 2021
- UC Berkeley CS285 Deep Reinforcement Learning, Virtual, December 2021
- Tsinghua University Introduction to Artificial Intelligence, Virtual, November 2021
- Tutorial at the Conference on Robot Learning (CoRL), Virtual, November 2021
- Novel Ideas in Learning to Learning through Interaction (NILLI) workshop at EMNLP, Virtual, November 2021
- Intel Deep Learning Community of Practice, Virtual, October 2021
- ML@Berkeley, Virtual, October 2021
- Cultivator Saskatchewan Startup Summit (Panelist), Virtual, September 2021
- Montreal Institute of Learning Algorithms (MILA) RL Sofa, Virtual, July 2021
- University of Regina Department of Computer Science Alumni and Friends Lecture Series, Virtual, June 2021
- Berkeley Center for Human-Compatible Artificial Intelligence (CHAI) Workshop, Virtual, June 2021
- McGill University AI4Good Lab, Virtual, May 2021
- ICLR Social AI Virtual Gathering, Virtual, May 2021
- Jay Shah Machine Learning Podcast, Virtual, March 2021
- Re-Work Women In AI Podcast, Virtual, March 2021

- Berkeley Center for Human-Compatible Artificial Intelligence (CHAI) Seminar, Virtual, February 2021
- Oxford Department of Computer Science Seminar, Virtual, February 2021
- Re-Work Deep Learning 2.0 Summit, Virtual, January 2021
- Institute of Cognitive Science, University of Osnabrück Deep Reinforcement Learning Workshop, Virtual, January 2021
- NeurIPS Cooperative AI Workshop (Panelist), Virtual, December 2020
- University College London Deciding, Acting, and Reasoning with Knowledge (DARK) Seminar, Virtual, December 2020
- Google Apprenticeship Learning Summit, Virtual, December 2020
- Microsoft Research New York, Virtual, November 2020
- Microsoft AI Breakthroughs Workshop, Virtual, September 2020
- DeepMind Seminar, Virtual, August 2020
- Google Synthetic Characters Conference, Virtual, August 2020
- Brain RL Seminar, Virtual, August 2020
- Samsung Forum, Virtual, April 2020
- AAAI workshop on Affective Content Analysis (**Keynote**), New York, USA, February 2020
- Berkeley Center for Human-compatible AI (CHAI) seminar, Berkeley, USA, November 2019
- IBM K-12 Education Conference, Cambridge, USA, October 2019
- ICML workshop on Imitation, Intent, and Interaction, Cambridge, USA, June 2019
- Broad Institute, Cambridge, USA, February 2019
- Schlumberger-Doll Research Center, Cambridge, USA, December 2018
- Google AI, Montreal, Canada, December 2018
- New York University, New York, USA, November 2018
- Starsconf **(Keynote)**, Santiago, Chile, November 2018
- Creative AI Meetup, London, UK, September 2018
- Department of Computer Science Image and Video Computing Seminar Series, Boston University, Boston, USA, March 2017
- University of Regina, Regina, Canada, January 2017

PRESS

- **Degrees Magazine**. Cataldo, S. (2021, November 19). *The sky's the limit.* Retrieved from: https://www.degreesmagazine.ca/the-skys-the-limit/2021/11/19/
- **Science**. Hutson, M. (2021, January 19). *Who needs a teacher? Artificial intelligence designs lesson plans for itself.* Retrieved from: https://www.sciencemag.org/news/2021/01/who-needs-teacher-artificial-intelligence-designs-lesson-plans-itself
- **TopBots**. Yao, M (2019, December 12). *Breakthrough Research in Reinforcement Learning.* Retrieved from: https://www.topbots.com/top-ai-reinforcement-learning-research-papers-2019/
- **IEEE Spectrum**. Hutson, M. (2019, June 17). *DeepMind Teaches AI Teamwork.* Retrieved from: https://spectrum.ieee.org/tech-talk/computing/software/deepmind-teaches-ai-teamwork
- **MIT Technology Review**. Hao, K. (2019, June 20). *Here are 10 ways AI could help fight climate change.* Retrieved from: https://www.technologyreview.com/s/613838/ai-climate-change-machine-learning/
- **National Geographic**. Snow, J. (2019, July 18). *How artificial intelligence can tackle climate change.* Retrieved from: https://www.nationalgeographic.com/environment/2019/07/artificial-intelligence-climate-change/
- **Quartz**. Gershgorn, D. (2018, February 16). *Google is building AI to make humans smile.* Retrieved from: https://qz.com/1209466/google-is-building-ai-to-make-humans-smile/
- **MIT Technology Review**. Knight, W. (2016, November 30). *AI songsmith cranks out surprisingly catchy tunes.* Retrieved from: https://www.technologyreview.com/s/603003/ai-songsmith-cranks-out-surprisingly-catchy-tunes/
- **Boston Magazine**. Annear, S. (2015, January 5). *Website tracks your happiness to remind you life's not so bad.* Retrieved from: http://www.bostonmagazine.com/news/blog/2015/01/05/smiletracker-captures-photos-internet/
- **Canadian Broadcasting Corporation (CBC)**. Brace, S. (2015, January 5). *Regina woman develops smile app at MIT* Retrieved from: https://www.cbc.ca/news/canada/saskatchewan/regina-woman-develops-smile-app-at-mit-1.2886943

PUBLICATIONS [Google Scholar]

*Equal Contribution

59. Wan, Y., Wu, Y., Wang, Y., Mao, J.* & Jaques, N.*, "Infer Human's Intentions Before Following Natural Language Instructions", *Association for the Advancement of Affective Computing (AAAI)*, (submitted) (2024).
58. Holder, J., Jaques, N., & Mesbahi, M., "Multi Agent Reinforcement Learning for Sequential Satellite Assignment Problems", *Association for the Advancement of Affective Computing (AAAI)*, (submitted) (2024).

57. Li, M., Haberland, C. & Jaques, N.*, "Genetic Curriculum Learning for Distribution Generalization on the Travelling Salesman Problem", *Association for the Advancement of Affective Computing (AAAI)*, (submitted) (2024).

56. Poddar, S., Wan, Y., Gupta, A.*, & Jaques, N.*, "Personalizing Reinforcement Learning from Human Feedback with Variational Preference Learning", *Neural Information Processing Systems (NeurIPS)*, (submitted) (2024).

55. Liang, Y., Chen, D., Gupta, A., Du, S.*, & Jaques, N.*, "Learning to Cooperate with Humans Using Generative Agents", *Neural Information Processing Systems (NeurIPS)*, (submitted) (2024).

54. Scarlatos, A., Wu, Y., Simon, I., Roberts, A., Cooijmans, T., Jaques, N., Tarakajian, C., & Huang, C.-Z. A., "ReaLJam: Real-Time, Synchronous Human-AI Music Jamming with Reinforcement Learning-Tuned Transformers", *Preprint*, (2024).

53. Wu, Y., Cooijmans, T., Kastner, K., Roberts, A., Simon, I., Scarlatos, A., Donahue, C., Tarakajian, C., Omidshafiei, S., Courville, A., Castro, P., Jaques, N., & Huang, C.-Z. A., "Adaptive Accompaniment with ReaLchords", *International Conference on Machine Learning (ICML)*, (2024).

52. Bilodeau, B., Jaques, N., Koh, P. W., & Kim, B., "Impossibility Theorems for Feature Attribution", *Proceedings of the National Academy of Sciences (PNAS)*, (2024).

51. Grupen, N., Jaques, N., Kim, B., & Omidshafiei, S., "Concept-based Understanding of Emergent Multi-Agent Behavior", *Preprint*, (2023).

50. Abdulhai, M., Crepy, C., Valter, D., Canny, J., Levine, S., & Jaques, N., "Moral Foundations of Large Language Models", ***Best Paper*** *at the AAAI workshop on Representation Learning for Responsible Human-Centric AI*, (2023).

49. Krishnan, S., Jaques, N., Omidshafiei, S., Zhang, D., Gur, I., Reddi, V. J., & Faust, S., "Multi-Agent Reinforcement Learning for Hardware Architecture Search: A Case Study on Domain-Specific DRAM Memory Controller Design", *NeurIPS Machine Learning for Systems workshop*, (2022).

48. Wang, R. E., Mu, J., Arumugam, D., Jaques, N., & Goodman, N., "In the ZONE: Measuring difficulty and progression in curriculum generation", *NeurIPS 2022 Deep Reinforcement Learning Workshop*, (2022).

47. Abdulhai, M., Jaques, N., & Levine, S., "Basis for Intentions: Efficient Inverse Reinforcement Learning using Past Experience", *Preprint*, (2022).

46. de Looff, P., Duursma, R., Noordzij., M. L., Taylor, S., Jaques, N., Scheepers, F., De Schepper, K., & Koldijk, S., "Wearables: an R package with accompanying Shiny application for signal analysis of a wearable device targeted at clinicians and researchers", *Frontiers in behavioral neuroscience*, (2022).

45. Wang, S., Montgomery, C., Orbay, J., Birodkar, V., Faust, A., Gur, I., Jaques, N., Waters, A., Baldridge, J., & Anderson, P., "Less is More: Generating Grounded Navigation Instructions from Landmarks", *Computer Vision and Pattern Recognition (CVPR)*, Virtual (2022).

44. Gur, I., Jaques, N., Malta, K., Tiwari, M., Lee, H., & Faust, A., "Environment Generation for Zero-Shot Compositional Reinforcement Learning", *Neural Information Processing Systems (NeurIPS)*, Virtual (2021).

43. Filos, A., Lyle, C., Gal, Y., Levine, S., Jaques, N.*, & Farquhar, G.*, "PsiPhi-Learning: Reinforcement Learning with Demonstrations using Successor Features and Inverse Temporal Difference Learning", *International Conference on Machine Learning (ICML)* ***Oral (top 3% of submissions)***, Virtual (2021).

42. Ndousse, K., Eck, D., Levine, S., & Jaques, N., "Emergent Social Learning via Multi-agent Reinforcement Learning", *International Conference on Machine Learning (ICML)* , Virtual (2021).

41. Fickinger, A.*, Jaques, N.*, Parajuli, S., Chang, M., Rhinehart, N., Berseth, G., Russell, S., & Levine, S., "Explore and Control with Adversarial Surprise", *ICML Unsupervised Reinforcement Learning workshop*, Virtual (2021).

40. Lee, D., Jaques, N., Kew, J., Eck, D., Schuurmans, D., & Faust, A., "Joint Attention for Multi-Agent Coordination and Social Learning", *ICRA Social Intelligence Workshop* ***Spotlight talk***, Virtual (2021).

39. Ndousse, K., Eck, D., Levine, S., & Jaques, N., "Learning Social Learning", *NeurIPS Cooperative AI Workshop* ***Best Paper*** , Virtual (2020).

38. Dennis, M.*, Jaques, N.*, Vinitsky, E., Bayen, A., Russell, S., Critch, A., & Levine, S., "Emergent Complexity and Zero-Shot Transfer via Unsupervised Environment Design", *Neural Information Processing Systems (NeurIPS)* ***Oral (top 1% of submissions)***, Virtual (2020).

37. Jaques, N.*, Shen, J. H.*, Ghandeharioun, A., Ferguson, C., Lapedriza, A., Jones, N., Gu, S., & Picard, R., "Human-Centric Dialog Training via Offline Reinforcement Learning", *Empirical Methods in Natural Language Processing (EMNLP)*, Virtual (2020).

36. Jaques, N., "Social and Affective Machine Learning", *Massachusetts Institute of Technology*, PhD Thesis (2019).

35. Saleh, A.*, Jaques, N.*, Ghandeharioun, A., Shen, J. H., & Picard, R., "Hierarchical Reinforcement Learning for Open-Domain Dialog", *Association for the Advancement of Artificial Intelligence (AAAI)* ***Oral (top 7.8% of submissions)***, New York, USA (2019).

34. Jaques, N., Ghandeharioun, A., Shen, J. H., Ferguson, C., Lapedriza, A., Jones, N., Gu, S., & Picard, R., "Way Off-Policy Batch Deep Reinforcement Learning of Implicit Human Preferences in Dialog", *Neural Information Processing Systems (NeurIPS) Workshop on Conversational AI*, Vancouver, Canada (2019).

33. Ghandeharioun, A.*, Shen, J. H.*, Jaques, N.*, Ferguson, C., Jones, N., Lapedriza, A., & Picard, R., "Approximating Interactive Human Evaluation with Self-Play for Open-Domain Dialog Systems", *Neural Information Processing Systems (NeurIPS)*, Vancouver, Canada (2019).

32. Rolnick, D., Donti, P. L., Kaack, L. H., Kochanski, K., Lacoste, A., Sankaran, K., Ross, A. S., Milojevic-Dupont, N., Jaques, N., Waldman-Brown, A., Luccioni, A., Maharaj, T., Sherwin, E. D., Mukkavilli, S. K., Kording, K. P., Gomes, C., Ng, A. Y., Hassabis, D., Platt, J. C.,

Creutzig, F., Chayes, J., Bengio, Y., "Tackling Climate Change with Machine Learning", *ACM Computing Surveys*, (2019).

31. Jaques, N., Lazaridou, A., Hughes, E., Gulcehre, C., Ortega, P. A., Strouse, D. J., Leibo, J.Z. & de Freitas, N., "Social Influence as Intrinsic Motivation for Multi-Agent Deep Reinforcement Learning", *International Conference on Machine Learning (ICML)* ***Best Paper Honourable Mention (top 0.26% of submissions)***, Long Beach, USA (2019).

30. Jones, N., Jaques, N., Pataranutaporn, P., Ghandeharioun, A., & Picard, R., "Automatic Triage and Analysis of Online Suicide Risk with Document Embeddings and Latent Dirichlet Allocation", *Affective Computing and Intelligence Interaction (ACII) workshop on Machine Learning for Mental Health*, (2019).

29. Jaques, N., McCleary, J., Engel, J., Ha, D., Bertsch, F., Eck, D. & Picard, R., "Learning via Social Awareness: Improving a Deep Generative Sketching Model with Facial Feedback", *International Conference on Learning Representations (ICLR) workshop*, (2018).

28. Johnson, K., Taylor, S., Fedor, S., Jaques, N., Chen, W., & Picard, R., "Vomit Comet Physiology: Autonomic Changes in Novice Flyers", *IEEE Engineering in Medicine and Biology Society (EMBC)*, Honolulu, USA (2018).

27. Jaques, N., Gu, S., Bahdanau, D., Hernández-Lobato, J. M., Turner, R. E. & Eck, D., "Sequence Tutor: Conservative Fine-Tuning of Sequence Generation Models with KL-control", *International Conference on Machine Learning (ICML)*, Sydney, Australia (2017).

26. Taylor, S.*, Jaques, N.*, Nosakhare, E., Sano, A. & Picard, R., "Personalized Multitask Learning for Predicting Tomorrow's Mood, Stress, and Health", *IEEE Transactions on Affective Computing*, (2017).

25. Jaques, N., Rudovic, O., Taylor, S., Sano, A. & Picard, R., "Predicting Tomorrow's Mood, Health, and Stress Level using Personalized Multitask Learning and Domain Adaptation", *Proceedings of Machine Learning Research*, 48, 17-33 (2017).

24. Jaques, N., Taylor, S., Sano, A. & Picard, R., "Multimodal Autoencoder: A Deep Learning Approach to Filling in Missing Sensor Data and Enabling Better Mood Prediction", *International Conference on Affective Computing and Intelligent Interaction (ACII)*, San Antonio, USA (2017).

23. Taylor, S., Jaques, N., E. Nosakhare, Sano, A., Klerman, E. B. & Picard, R., "Importance of Sleep Data in Predicting Next-Day Stress, Happiness, and Health in College Students", *Journal of Sleep and Sleep Disorders Research (suppl_1)*, A294-A295 (2017).

22. Jaques, N., Gu, S., Turner, R. E. & Eck, D., "Tuning Recurrent Neural Networks with Reinforcement Learning", *International Conference on Learning Representations (ICLR) - workshop*, Toulon, France (2016).

21. Jaques, N.*, Taylor S.*, Nosakhare E., Sano A. & Picard R., "Multi-task Learning for Predicting Health, Stress, and Happiness", *Neural Information Processing Systems (NeurIPS) Workshop on Machine Learning for Healthcare* ***Best Paper***, Barcelona, Spain (2016).

20. Roberts, A., Engel, J., Hawthorne, C., Simon, I., Waite, E., Oore, S., Jaques, N., Resnick, C. & Eck, D., "Interactive Musical Improvisation with Magenta", *Neural Information Processing Systems (NeurIPS)* ***Best Demo***, Barcelona, Spain (2016).

19. Jaques, N., McDuff, D., Kim, Y. K., & Picard R., "Understanding and Predicting Bonding in Conversations Using Thin Slices of Facial Expressions and Body Language", *Intelligent Virtual Agents (IVA)*, Los Angeles, USA (2016).

18. Jaques, N., Kim, Y. K., & Picard R., "Personality, Attitudes, and Bonding in Conversations", *Intelligent Virtual Agents (IVA)*, Los Angeles, USA (2016).

17. Jaques, N., Rich, T., Dinakar, K., Farve, N., Chen, W.V., Maes, P. & Picard, R., "BITxBIT: Encouraging Behavior Change with N=2 Experiments", *Proceedings of the CHI Conference Extended Abstracts on Human Factors*, San Jose, USA (2016).

16. Taylor, S., Jaques, N., Sano, A., Azaria, A., Ghandeharioun, A. & Picard, R., "Machine Learning of Sleep and Wake Behaviors to Classify Self-Reported Evening Mood", *Sleep*, Denver, USA (2016).

15. Jaques, N.*, Taylor, S.*, Sano, A. & Picard, R., "Multi-task Multi-Kernel Learning for Estimating Individual Wellbeing", *Neural Information Processing Systems (NeurIPS) Workshop on Multimodal Machine Learning*, Montreal, Canada (2015).

14. Xia, V., Jaques, N., Taylor, S., Fedor, S. & Picard, R., "Active learning for Electrodermal Activity classification", *IEEE Conference on Signal Processing in Medicine and Biology (SPMB)*, Philadelphia, USA (2015).

13. Jaques, N.*, Taylor, S.*, Azaria, A., Ghandeharioun, A., Sano, A. & Picard R., "Predicting students' happiness from physiology, phone, mobility, and behavioral data", *International Conference on Affective Computing and Intelligent Interaction (ACII)*, Xi'an, China (2015).

12. Taylor, S.*, Jaques, N.*, Chen, W., Fedor, S., Sano, A. & Picard, R., "Automatic identification of artifacts in Electrodermal Activity data", *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Milan, Italy (2015).

11. Chen, W., Jaques, N., Taylor, S., Sano, A., Fedor, S. & Picard R., "Wavelet-based motion artifact removal for Electrodermal Activity", *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Milan, Italy (2015).

10. Sano, A., Yu, A. Z., McHill, A. W., Phillips, A.J., Taylor, S., Jaques, N., Czeisler, C. A., Klerman, E. B. & Picard, R., "Prediction of happy-sad mood from daily behaviors and previous sleep history", *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Milan, Italy (2015).

9. Jaques, N. & Farve, N., "Engaging the workplace with challenges", *International Conference on Persuasive Technologies*, Chicago, USA (2015).

8. Jaques, N., Chen, W. V. & Picard, R., "SmileTracker: Automatically and Unobtrusively Recording Smiles and their Context.", *Proceedings of the CHI Conference Extended Abstracts*, Seoul, Korea (2015).

7. Sano, A., Phillips, A. J., Yu, A. Z., McHill, A. W., Taylor, S., Jaques, N., Czeisler, C. A., Klerman, E. B. & Picard, R., "Recognizing academic performance, sleep quality, stress level, and mental health using personality traits, wearable sensors and mobile phones", *Wearable and Implantable Body Sensor Networks (BSN)*, Cambridge, USA (2015).

6. Jaques, N., "Predicting Affect in an Intelligent Tutoring System", *University of British Columbia*, Master's Thesis (2014).

5. Jaques, N., Conati, C., Harley, J. M. & Azevedo, R., "Predicting Affect from Gaze Data During Interaction with an Intelligent Tutoring System", *Intelligent Tutoring Systems*, Honolulu, USA (2014).

4. Conati, C., Jaques, N. & Muir, M., "Understanding attention to adaptive hints in educational games: an eye-tracking study", *International Journal of Artificial Intelligence in Education*, 23(1-4), 136-161 (2013).

3. Jaques, N., "Emotionally Adaptive Intelligent Tutoring Systems using POMDPs", *Unpublished manuscript*, (2013).

2. Jaques, N., "Fast Johnson–Lindenstrauss transform for classification of high dimensional data", *Unpublished manuscript*, (2013).

1. Jaques, N. & Nutini, J., "A Comparison of Random Forests and Dropout Nets for Sign Language Recognition with the Kinect", *Unpublished manuscript*, (2013).

TEACHING

UW CSE 599J Social Reinforcement Learning

Assistant Professor Spring 2024

I developed and taught a class focused on Social Reinforcement Learning, which included multi-agent learning, coordination, emergent complexity, inverse RL, and RLHF (see the syllabus).

Tutorial at the Cooperative AI Foundation Retreat

Lecturer Summer 2023

I gave a tutorial on Reinforcement Learning from Human Feedback (RLHF), connecting two lines of research into learning from human feedback, and fine-tuning language models with RL.

UC Berkeley CS285 Deep Reinforcement Learning

Guest Lecturer Fall 2021

I prepared and gave a guest lecture on multi-agent reinforcement learning, including problems of coordination and how to design multi-agent systems to induce the emergence of complex behavior.

Tsinghua University Introduction to Artificial Intelligence

Guest Lecturer Fall 2021

I prepared and gave a guest lecture on multi-agent reinforcement learning, including problems of coordination and how to design multi-agent systems to induce the emergence of complex behavior.

Tutorial at the Conference on Robot Learning (CoRL)

Lecturer Fall 2021

I prepared a tutorial on Social Reinforcement Learning for CoRL, which focused on multi-agent coordination, and multi-agent learning as a tool to improve learning and generalization for a single RL agent. There were approximately 250 attendees.

MIT MAS.S61 - Personalized Machine Learning (Graduate level)

Teaching Assistant Spring 2017

The first iteration of a course focused on multi-task and domain adaptation methods for training machine learning classifiers that are personalized to fit the individual, but which still gain statistical strength from the population. Several projects I completed during my PhD were used to create material for the course; I delivered lectures, recitations, designed teaching material and assignments, and helped grade projects.

MIT 6.867 - Machine Learning (Graduate level)
Teaching Assistant Fall 2016

MIT's main graduate level course on machine learning methods. In addition to delivering recitations and grading homework and exams, I developed the first deep learning assignment for the course.

UBC CPSC 344 - Intro to HCI Methods (Graduate level)
Teaching Assistant Fall 2013

Tools and techniques teaching a systematic approach to interface design, task analysis, analytic and empirical evaluation.

UBC CPSC 430 - Computers and Society
Teaching Assistant Fall 2012

A course examining the social and ethical issues of modern technology.

U. of R. CS 102 - Intro to Computer Science
Sessional Lecturer Summer 2012

Taught an intro CS course, and developed a novel set of course material, including the syllabus, lecture notes, and homework assignments.

U. of R. Math 110 - Calculus I
Supplemental Instruction Fall 2010

Delivered recitations to help students work understand differentiation, integration, optimization, etc.

U. of R. CS 102 - Intro to Computer Science
Supplemental Instruction 2008-2012

Led optional recitations for intro to computer science, answering questions and designing problems to help students understand the material. As one of the first students to participate in the program, I helped to develop materials for it, including creating a web app to support it.

MENTORSHIP

UW Women in Computing Careers Series
Speaker Winter 2024

The goal of this program is to give connect female and non-binary identifying students with women leaders and experts in the field of computer science.

Cooperative AI workshop Mentorship Program
Organizer Summer 2021

I planned and implemented the NeurIPS 2021 Cooperative AI workshop mentorship program, which pairs junior researchers from underrepresented groups with a senior researcher who can provide feedback on their submission.

Google Computer Science Research Mentorship Program

Mentor Spring 2021

I supported computer science graduate students from under-represented groups through a twelve week program in which I counseled them on research, and provided career and networking advice.

Climate Change AI (CCAI) workshop

Mentor Spring 2021

I served as a Research Mentor as part of the Climate Change AI (CCAI) ICML workshop program. I provided feedback, advice, and research discussions to a mentee interested in submitting to the workshop

NeurIPS Affinity Groups Mentorship

Mentor Winter 2020

I participated in Black in AI and Women in ML (WIML) as a mentor, hosting roundtable sessions in which I answered questions and provided guidance about finding a job in industry and choosing between industry and academia.

Richard Tapia Diversity in Computing Conference

Mentor Fall 2020

I participated in the conference as a mentor, and hosted a roundtable session with students, answering questions and providing career guidance

NeurIPS Climate Change AI Workshop

Mentor Summer 2020

The goal of the CCAI mentorship program is to pair individuals with machine learning research expertise with students working on climate-focused ML projects. I provided research advice related to reinforcement learning to students working on the problem of directing resources to stop wildfire spread.

OpenAI Scholars Program

Mentor Summer 2018, Spring 2020

The Scholars program is an initiative to encourage individuals from underrepresented groups to study deep learning. Mentors provide guidance to participants in gaining a technical understanding of deep learning and advise on their projects.

Berkeley AI Research (BAIR) mentoring

Mentor 2020

As a BAIR mentor, I helped support undergraduates from traditionally underrepresented groups to embark on a career in machine learning research.

SERVICE TO PROFESSION

Research Community Leadership

- Berkeley Multi-agent Reinforcement Learning Seminar (2020-2023): Creator/Organizer
- NeurIPS Cooperative AI workshop (2021): Organizer, Area Chair
- NeurIPS Cooperative AI workshop (2020): Panelist, Q&A Moderator
- ICLR Climate Change for Artificial Intelligence (CCAI) workshop (2019): Organizer

- NeurIPS Emergent Communication (EmeComm) workshop (2019): Organizer
- ICML Artificial Intelligence in Affective Computing (AffComp) workshop (2018): Organizer

Reviewing and Program Committees

- Neural Information Processing Systems (NeurIPS) (2019, 2020, 2021, 2022, 2023, 2024): Area Chair, Reviewer (Top ranked)
- International Conference on Machine Learning (ICML) (2019, 2020, 2021): Reviewer
- International Conference on Learning Representations (ICLR) (2021, 2022): Reviewer
- Affective Computing and Intelligent Interaction (ACII) (2021): Reviewer
- NeurIPS Cooperative AI workshop (2020): Program Committee
- NeurIPS Offline RL workshop (2020): Program Committee
- Women in Machine Learning (WIML) at NeurIPS (2019): Reviewer
- Association for the Advancement of Artificial Intelligence (AAAI) (2019, 2020): Reviewer
- Imitation, Intent, and Interaction Workshop (I3W) at ICML (2019): Program Committee
- Transactions on Affective Computing (TAFFC) (2019): Reviewer
- Transactions on Audio, Speech, and Language Processing (TASL) (2019): Reviewer
- Workshop on Machine Learning for Healthcare (ML4HC) at NeurIPS (2018): Program Committee
- Workshop on Artificial Intelligence in Affective Computing (AffComp) at IJCAI (2018): Program Committee
- Transactions on Computer-Human Interaction (ToCHI) (2017): Reviewer
- Transactions on Knowledge and Data Engineering (TKDE) (2017): Reviewer
- Workshop on Machine Learning for Healthcare (ML4HC) at NeurIPS (2016, 2017): Program Committee
- Computer Human Interaction (CHI) (2015, 2016): Reviewer

Grant Reviewing

- Cooperative AI General Research Grants (2024): reviewer and panelist
- NSF HCC Human-AI and Human-Vehicle Interactions (2024): reviewer and panelist

COMMUNITY SERVICE

Saskatchewan Startup Incubator Cultivator 2021
Virtual

Cultivator is a startup incubator based in the province of Saskatchewan. I volunteered to help support local startups by consulting with CEOs of companies using AI and machine learning.

Climate Change AI (CCAI) 2020
Virtual

As one of the committee members of CCAI (https://www.climatechange.ai/), I helped catalyze the use of machine learning technology for mitigating and adapting to climate change through building a community of diverse stakeholders and connecting them to resources such as information and funding.

Media Lab Carbon Offsets 2019
Cambridge, USA

Together with two other students, I petitioned for funding to create a program to offset the carbon emissions of research-related flights for the Media Lab: https://offset.media.mit.edu/

Students Offering Support 2015, 2017
Cambridge, USA

SOS aims to assist under-represented students applying to the Media Lab. I helped participants with their application portfolio and statement.

Cradles to Crayons 2015
Boston, USA

I helped to sort and package donations of clothing, toys, and books for children in low-income families.

UBC Thunderbots 2013-2014
Vancouver, Canada

Thunderbots is a project to build competitive, soccer playing robots. I contributed by working on the AI driving the robots' plays and tactics

Girlsmarts 2012-2014
Vancouver, Canada

Planned and organized workshops aimed at increasing interest in Computer Science among elementary-school-aged girls. Helped teach programming and robotics activities.

UBC CS Graduate Student Assocation - Vice President, Social 2013
Vancouver, Canada

I organized social events for the graduate Computer Science students at UBC.

U. of R. CS Students' Society - Vice President 2010-2012
Regina, Canada

I participated in running the Computer Science students' society, including organizing fundraising events.

Mother Teresa Middle School Science Camp 2011
Regina, Canada

I volunteered for an *option gratuis* summer camp for economically and socially disadvantaged youth from the core of Regina. We built robots.

LANGUAGES AND TOOLS

Python, Tensorflow, Pytorch, Ruby, Django, Javascript, Matlab, C, C++, C#, Scipy, Scikit-learn, Pandas AWS, Google App Engine, Theano, Weka, Angular, Git, SVN, PHP, VB, Octave, Prolog

OPEN SOURCE PROJECTS

Social RL
https://github.com/google-research/google-research/tree/master/social_rl
The Social RL repo comprises three different repos. The first is a set of multi-agent training environments including navigation and sparse reward tasks. Second is code to train multiple independent agents using TF Agents and PPO. Finally, the third repo supports adversarial environment generation, which enables learning an RL policy to generate environments in order to challenge a second set of learning agents.

EDA Explorer
http://eda-explorer.media.mit.edu/
An open source web application which allows anyone to upload Electrodermal Activity (EDA) data, visualize it, and analyze it using built-in machine learning algorithms. The site currently has hundreds of users, hosts thousands of EDA files, and has accelerated a number of research projects.

Sequence Tutor
https://github.com/tensorflow/magenta/tree/master/magenta/models/rl_tuner
Code for training an RNN sequence model first on data, and then with a reinforcement learning loss function combining temporal difference learning with extrinsic reward, while penalizing KL-divergence from the policy of the pre-trained model.

Personalized Multi-task Learning
https://github.com/mitmedialab/PersonalizedMultitaskLearning
Code for three types of multi-task learning (MTL) models personalized to individual human data. Models include: i) a non-parametric hierarchical Bayesian model, ii) a MTL deep neural network, iii) Multi-task Multiple Kernel Learning, and all relevant baselines.