

Anna Koop

Curriculum Vitae

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- Interests** **Machine Learning and Cognitive Science.** Specifically learning in changing environments, reinforcement learning, and model-learning for autonomous artificial agents.
- Education**
- Ph.D. candidate, Computing Science,** University of Alberta 2016
Advisors: Drs Michael Bowling, Patrick M. Pilarski, and Dale Schuurmans
- M.Sc., Computing Science,** University of Alberta 2008
Departmental Best Thesis Award. Advisor: Dr Richard S. Sutton
- B. Sc., Specialization Computing Science,** University of Alberta 2005
First-Class Standing
- Employment**
- Research Associate,** Edmonton, AB 2021–present
University of Alberta Investigating the application of binary context trees to reinforcement learning.
- Managing Director of Applied Science,** Edmonton, AB 2017–2021
Alberta Machine Intelligence Institute Led a team of Machine Learning Scientists, provided research direction and strategic vision.
- Data Scientist,** Edmonton, AB 2016–2017
Alberta Machine Intelligence Institute, University of Alberta. Connected small-to-medium-sized businesses to machine learning expertise, supervised project development.
- Sessional Instructor, Computing Science,** Camrose, AB 2015–2016
Department of Science, Augustana Faculty, University of Alberta. Re-designed and delivered new applied Software Engineering course. Developed courses on Artificial Intelligence, Theoretical Computing, Parallel and Distributed Computing.
- Research Assistant,** Edmonton, AB 2014–2015
Bionic Limbs for Improved Natural Control, University of Alberta. Applied machine learning to myoelectric prosthetic control.
- Research Assistant,** Edmonton, AB 2013–2014
Alberta Innovates Centre for Machine Learning, University of Alberta. Developed a new automatic, context-aware meta-learning algorithm.
- Curator,** Edmonton, AB 2011–2013
AITopics.org Developed and curated content for the AI Topics pages on Computer Games, under supervision of Jonathan Schaeffer and Bruce Buchanan. Duties included interviewing eminent guests to update pages and consolidating existing material.

Research Assistant, Edmonton, AB 2005–2011
RL & AI Research Group, University of Alberta. Developed core ideas in empirical knowledge representation; coded in Python, Matlab, Java, C++ and Lisp; coordinated lab activities and volunteer efforts.

Undergraduate Researcher, Edmonton, AB 2003–2005
Alberta Ingenuity Centre for Machine Learning. Led the development of Open Pages, a web-based collaboration tool. Work included administration of the server, development of project goals, supervision of another programmer, and programming scripts in Python and Javascript.

Web Application Developer and System Administrator 2000–2003
Self-employed. Developed applications for commercial websites using PHP, MySQL, Perl, and Bash. Administrated the web server for a small hosting company.

Teaching

Online Instructor, Coursera Specialization, Edmonton, AB 2019
Amii, University of Alberta. Developed a specialization series "Machine Learning: Algorithms in the Real World" for introducing Machine Learning, focusing on the issues arising from finding business value and directing efforts towards tangible business outcomes.

Instructor for Directed Reading, Camrose, AB 2016
Department of Science, Augustana Faculty, University of Alberta. Mentored a student completing a CSL placement with the Camrose library, including a research component into 3D printing. Coached student in initial design of an inventory system project, critical reading of academic resources, and putting together a proposal for the acquisition of a 3D printer for the Department of Science.

Sessional Instructor, Programming Languages, Camrose, AB 2016
Department of Science, Augustana Faculty, University of Alberta. Taught course on C and non-procedural programming (AUCSC 370), including expansion of instructional materials and testing online systems for assignment delivery and completion.

Sessional Instructor, Artificial Intelligence, Camrose, AB 2016
Department of Science, Augustana Faculty, University of Alberta. Created course in Artificial Intelligence (AUCSC 460), providing a broad overview of major approaches to AI. Tasks included creating lectures, quizzes, assignments, labs, and grading.

Sessional Instructor, Software Engineering, Camrose, AB 2015–2016
Department of Science, Augustana Faculty, University of Alberta. Re-designed second and third-year software engineering courses to include semester-long project (AUCSC 220) and community-service learning component (AUCSC 320), including all-new lecture content, assignment and quiz design, grading, and lab/tutorial instruction.

Sessional Instructor, Theoretical Computing, Camrose, AB 2016
Department of Science, Augustana Faculty, University of Alberta. Created flipped course in Automata, Computability, and Complexity (AUCSC 415) which integrated literature surveys of classic works in computing science, student-led discussions, some traditional lecture material, and individual research project development.

Sessional Instructor, Parallel and Distributed Computing, Camrose, AB 2015
Department of Science, Augustana Faculty, University of Alberta. Taught course on high-performance computing (AUCSC 450) including lecture creation, assignment design, development of active-learning components, and grading.

Teaching Assistant, Game Design, Edmonton, AB 2012–2013
Department of Computing Science, University of Alberta. Assisted Michael Bowling on all aspects of the development of a lab-based course on game design (INT D 325), including rubric and assignment design, lecture development and delivery, and grading.

Teaching Assistant, Graduate Studies, Edmonton, AB 2011–2012
Department of Computing Science, University of Alberta. Assisted Joerg Sander in the introductory graduate course (CMPUT 603), including grading, supporting students, and developing some assignments and lectures.

Teaching Assistant, Introductory Python, Edmonton, AB 2012
Department of Computing Science, University of Alberta. Lab TA for the spring introductory python course (CMPUT 173), including directing labs, grading, review lectures, and developing review exercises.

Tutor, Edmonton, AB 2001–2004
Academy for Maths and Sciences. Tutored calculus, applied math, physics, chemistry, english, and language arts for high school, junior high, and middle school students.

Awards and Honors

Scholarships

NSERC PGS-D Scholarship for Ph. D. (3 year)	2008
President's Doctoral Prize of Distinction (3 year)	2008
NSERC CGS-M Scholarship for M. Sc. (1 year)	2006
Walter H. Johns Graduate Fellowship (1 year)	2006
Alberta Ingenuity Studentship (5 year)	2005
iCORE Graduate Student Fellowship (5 year)	2005

Research

Refereed Conference Publications

Other Publications

Presentations

Outreach

Lab Scientist for Creative Destruction Lab Rockies 2018—present
 Provided advisement on Artificial Intelligence and Machine Learning for innovative startups. Vetted applicants and provided ongoing advice and feedback to companies.

- Instructor for Canada Learning Code** 2016–present
Led workshops on Python programming, Artificial Intelligence, and introductory computer concepts for adults, children, and teens.
- Assistant for Enigma Event** 2015, 2016
Assisted with development and presentation of the Enigma Machine demonstration during events at the Jeanne and Peter Lougheed Performing Arts Centre (Camrose, AB, 300 attendees) and the Telus World of Science centre (Edmonton, AB, 30 attendees).
- Volunteer Mentor for Ladies' Learning Code** 2014
Responsible for helping and encouraging students during an all-day workshop introducing participants to programming via Python.
- Mentor for WP Wagner High School** 2014
Mentored two students from WP Wagner High School, including in-person meeting, lab tour, and check-ins during the school year.
- Founding member of Ada's Team** 2013
Helped with the creation of a student group focused on increasing diversity in computing science and technology, moderated the 2014 Impostor Panel and 2015 Diversity and Careers panel.
- Graduate Advisory Council Member** 2012-2013
Served as a senior student representative on the Graduate Advisory Council, designed to facilitate communication and growth in the graduate Computing Science program.
- Coordinator for the Fall 2010 Pacman Contest for CSC 366** 2010
Ran the extra-credit contest using the Berkeley software package, coordinating with students and presenting final results.
- Co-chair for the 2008 Workshop for Women in Machine Learning** 2008–2009
Organized and managed finances for the Third Annual Workshop for Women in Machine Learning, an international workshop co-located with NIPS 2008.
- Outreach Coordinator** 2007–2008
Coordinated attendance of a University of Alberta contingent at the Grace Hopper Celebration of Women in Computing.
- Volunteer Presenter** 2006–2010
Presented on artificial intelligence and reinforcement learning at outreach events for junior high and high school students.
- Curriculum Developer** 2007
Headed development of demonstration software for teaching middle school and high school students about artificial intelligence.
- WISEST Supervisor** 2005
Supervised a high school student over two months who learned Javascript and developed a widget for Mac computers. Part of the WISEST summer research program.
- Seminar Coordinator** 2004–2005
Organized the weekly AI seminar, working with distinguished visitors and local profes-

sors, including cross-department outreach. Coordinated the department-wide Machine Learning Reading Group.