EMERGENCY TA Job Posting: APS1080: Introduction to Reinforcement Learning

This job is posted in accordance with the CUPE 3902 Unit 1 Collective Agreement.

Job Posting Date: Aug 10, 2022
Application Deadline: Aug 19, 2022

Estimated course enrollment: ~80

Course Description:
Reinforcement Learning (RL) is a systems-level Artificial Intelligence toolset; this course will provide the student with both a solid theoretical foundation and a strong practical understanding of the subject. RL enables autonomous agents to cope with poorly-characterized, novel environments by exploring the environment to gain knowledge about it, and to exploit this knowledge of the environment to act in a goal-directed manner. Although RL is positioned as one of three facets of Machine Learning, RL has far broader scope than the narrower tools of supervised and unsupervised learning. RL, being founded on agent design, has the goal of developing artificial intelligence schemes that can endow an agent with autonomy. This introduction, thus, will be presented within the motivating context of an overall AI system. There are three foundational RL tools we will cover (dynamic programming, Monte Carlo, Temporal-Difference Learning); we will also show how hybridizations of these foundational tools are employed to create production schemes. The student should leave the course with the ability to practically apply this AI toolset to novel problems.
This course is taught online.

2 positions Available – 30 Hours

Duties: developing solutions for assignments and tests, grading assignments and tests

Qualifications: very strong Python programming skills, knowledge of machine learning, linear algebra, calculus, probability, some knowledge of reinforcement learning and AI, must be able to TA online

Relevant criterion: Previous experience is the more relevant criterion than the need to acquire experience in respect of this posted position.

Rate of Pay: Current TA rates: U/G: $47.17/hour; SGS I: $47.17/hour; SGS II: $47.17/hour

For more information about this course, see https://gradstudies.engineering.utoronto.ca/professional-degrees/emphasis-in-analytics/
Notes:

1. TA position and hours posted are tentative, pending final course determination and enrollment.
2. The Vice-Dean of Graduate Studies in the Faculty of Applied Science & Engineering has the sole authority to offer the above TA positions.
3. CUPE 3902 Unit 1 Collective Agreement is available at http://agreements.hrandequity.utoronto.ca.

To apply for a TA position, please submit your application via this form. If this link does not work please email your application (CV and Resume as a SINGLE PDF FILE) directly to David Duong d.duong@utoronto.ca by August 19, 2022

EMERGENCY TA Job Posting: APS1081: Quantum Machine Learning

This job is posted in accordance with the CUPE 3902 Unit 1 Collective Agreement.

Job Posting Date: Aug 10, 2022
Application Deadline: Aug 19, 2022

Estimated course enrollment: ~50

Course Description:
Quantum computation offers a novel substrate on which machine learning and other adaptive systems may be profitably realized. The course provides the student with the foundations of quantum computation (QC), machine learning algorithms, and how machine learning systems — both classical and novel ones — can benefit from QC. The foundations of classical analog and digital computation will be first covered, including relevant aspects of the theory of operation of classical computers, how such computers are realized in hardware, and how algorithmic performance is achieved. Quantum computation (QC) will be discussed from an operational (engineering) perspective, with an emphasis on how quantum and classical computation differ, and the implications of these differences on (a) theoretical algorithmic performance, (b) novel algorithmic schemes, and (c) other pragmatic facets. As a vehicle towards understanding QC, we will cover general QC algorithms, classical algorithms on QC, as well as adaptive machine learning systems. A brief survey of supervised, unsupervised and reinforcement learning will be provided, with an emphasis on those foundational aspects that stand to benefit from QC. How such schemes may be implemented on QC and the implementation and performance perspectives will be discussed, as well as how such schemes may be modified to exploit QC-specific advantages will be presented.
Being a course on the engineering facets of QC, ML and their intersection, the course has a significant practical component to provide students with relevant practical skills, and demonstration of the underlying theory.

1 position Available – 25 Hours

Duties: In-person invigilation of in-person Final Test
Physical Exam printing
Exam Scanning
Performing and Grading Assignments
Grading Final Test
Grading Term Paper

Qualifications: Strong Math skills (calc, lin alg, probability, geometry
Knowledge of Machine Learning
Knowledge of Quantum Computing
Strong Python programming skills and ability to program in a given environment (Colab, IBM Quantum)
Asset: Knowledge of IBM’s Quantum Computing Environment
Must be able to TA online

Relevant criterion: Previous experience is the more relevant criterion than the need to acquire experience in respect of this posted position.

Rate of Pay: Current TA rates: U/G: $47.17/hour;  SGS I: $47.17/hour;  SGS II: $47.17/hour

For more information about this course, see https://gradstudies.engineering.utoronto.ca/professional-degrees/emphasis-in-analytics/

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• The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from racialized persons / persons of colour, women, Indigenous / Aboriginal People of North America, persons with disabilities, LGBTQ2S+ persons, and others who may contribute to the further diversification of ideas.

• Candidates who are members of Indigenous, Black, racialized and LGBTQ2S+ communities, persons with disabilities, and other equity seeking groups are encouraged to apply, and their lived experience shall be taken into consideration as applicable to the position.

• The University strives to be an equitable and inclusive community, and proactively seeks to increase diversity among its community members. Our values regarding equity and diversity are linked with our unwavering commitment to excellence in the pursuit of our academic mission. The University is committed to the principles of the Accessibility for Ontarians with Disabilities Act (AODA). As such, we strive to make our recruitment, assessment and selection processes as accessible as possible and provide accommodations as required for applicants with disabilities. If you require any accommodations at any point during the application and hiring process, please contact uoft.careers@utoronto.ca. During employment, to request accommodation from the University, contact the supervisor or department chair and/or Health & Wellbeing Programs & Services at hwb@utoronto.ca. For more information about accommodations at U of T, please visit our Accommodation webpage.

• Duties of this position shall be performed at the campus on which the position is located. Where the duties are intended to be performed at another location, such other location will be specified in the posting.

• “The hiring Criteria for Teaching Assistant positions are academic qualifications, the need to acquire experience, previous experience and previous satisfactory employment under the provisions of this Collective Agreement.” OR “The hiring criteria for Course Instructors positions are academic qualifications, the need to acquire experience, previous teaching experience and previous satisfactory employment under the provisions of this Collective Agreement.” (as applicable)

• This job is posted in accordance with the CUPE 3902 Unit 1 Collective Agreement.

• Positions posted here are open to Graduate Students in the School of Graduate Studies, Postdoctoral Fellows and Undergraduate Students in the University of Toronto.

• FOR TA’s ONLY: Preference in hiring shall be given to Graduate Students enrolled in the School of Graduate Studies of the University of Toronto or those who have made application to be enrolled in the School of Graduate Studies of the University of Toronto.