Resources on Reinforcement Learning

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Resources on Reiforcement Learning

INTRODUCTION & TUTORIAL

- Online book Reinforcement Learning by Sutton and Barto (http://www.cs.ualberta.ca/%7Esutton/book/the-book.html) (HTML) . Check Prof. Richard S. Sutton Page here (http://www.cs.ualberta.ca/%7Esutton/index.html)
- FAQ about Reinforcement Learning (http://www.cs.ualberta.ca/%7Esutton/RL-FAQ.html)
- Reinforcement Learning by Dayan and Watkins (http://www.gatsby.ucl.ac.uk/%7Edayan/papers/dw01.pdf)
- Temporal Difference Learning and TD-Gammon (http://www.research.ibm.com/massive/tdl.html) By Gerald Tesauro (classical paper mark the success of RL)
- Reinforcement Learning: A Survey (http://www-2.cs.cmu.edu/afs/cs/project/jair/pub/volume4/kaelbling96a-html/rl-survey.html) by Leslie Pack Kaelbling, Michael L. Littman and Andrew W. Moore

- Extending Q-Learning to General Adaptive Multi-Agent Systems (http://books.nips.cc/papers/files/nips16/NIPS2003_CN16.pdf) by Gerald Tesauro
- Mark Humphrys dissertation contain how Q learning work, discrete Q learning (http://www.compapp.dcu.ie/%7Ehumphrys/PhD/ch2.html)
- Harmon's Reinforcement Learning Tutorial (PDF) (http://www.nbu.bg/cogs/events/2000/Readings/Petrov/rltutorial.pdf) - classical teaching material
- Statistical Data Mining of Andrew Moore (http://www.autonlab.org/tutorials/)
- Geri Tesauro Multi Agent Learning Mini Tutorial (PPT) (http://www.cs.rutgers.edu/%7Emlittman/topics/nips02/nips02/tesauro.ppt)
- Hagen and Krose short Intro to Reinforcement Learning (PDF) (http://citeseer.ist.psu.edu/cache/papers/cs/208/ftp:zSzzSzftp.wins.uva.nlzSzpubzSzcomputer-systemszSzaut-syszSzreportszSzHagKro97b.pdf/tenhagen97short.pdf)
- Gosavi Reinforcement Learning tutorial (http://www.eng.buffalo.edu/%7Eagosavi/tutorial.pdf)
- Colorado State Univ Reinforcement Learning and Control (http://www.cs.colostate.edu/%7Eanderson/res/rl/)
- Teknomo tutorial on Simple learning (../Learning/index.html)
- Calgary Intro to AI - Reinforcement Learning PPT (http://pages.cpsc.ucalgary.ca/%7Ejacob/Courses/Winter2000/CPSC533/Slides/05.3-Reinforcement.ppt)
- Wiering handout on RL and NN (PDF) (http://www.cs.uu.nl/docs/vakken/rl/RL_NEURAL_NETWORKS_HANDOUTS.pdf)
- Salsa Introduction to Reinforcement Learning (http://www.cs.indiana.edu/%7Egasser/Salsa/rl.html)

ARTICLES

- Reinforcement Learning With Self-Modifying Policies (http://www.idsia.ch/%7Ejuergen/ssabook/ssabook.html)
- Bayesian Q Learning by R. Dearden, N. Friedman, and S. Russell (http://www.cs.huji.ac.il/%7Enirf/Abstracts/DFR1.html)
- Multigrid Q-Learning (http://www.biographixmedia.com/stew/pubs/multiGridQlearning.pdf) by Charles W. Anderson and Stewart G. Crawford-Hines
- Improving Generalisation for Temporal Difference Learning: The Successor Representation (http://www.gatsby.ucl.ac.uk/%7Edayan/papers/d93b.pdf) by Peter Dayan
- Reinforcement Learning for Stochastic Cooperative Multi-Agent-Systems (http://amy.informatik.uos.de/riedmiller/publications/riedml.lauer.04.pdf) by Martin Lauer and Martin Riedmiller
- Feudal Reinforcement Learning (http://www.cs.toronto.edu/%7Ehinton/absps/dh93.pdf) by Peter Dayan and Geoffrey E Hinton
- A New Q-Learning Algorithm Based on the Metropolis Criterion (http://www.cs.lth.se/home/Jacek_Malec/psfiles/guoliumalec.pdf) by Maozu Guo, Yang Liu, and Jacek Malec

APPLICATIONS

- Oil Market Modeling Using Q-Learning (http://www.cis.cornell.edu/boom/2005/ProjectArchive/oil/boom.html) by Michael Wunder
- Pricing in agent economies using multi-agent Q-learning (http://www.research.ibm.com/infoecon/paps/html/gtdt99_maq/maq.html) by Gerald Tesauro and Jeffrey O. Kephart

- Multi-agent Q-learning and Regression Trees for Automated Pricing Decisions (http://www.research.ibm.com/infoecon/paps/html/qtree/qrt.html) by Manu Sridharan and Gerald J. Tesauro
- Reinforcement Learning and its Application to Othello (http://www.few.eur.nl/few/people/mvanwezel/rl.othello.ejor.pdf) by Nees Jan van Eck, Michiel van Wezel
- Reinforcement Learning applied to a Radar Tracking Task (http://web.media.mit.edu/%7Enitin/java/RLRadar/RLRadar.html) (Java Applet provided)
- Car Simulation Using Reinforcement Learning (http://www.cs.ubc.ca/%7Ezhijin/540report.pdf) by Zhijin Wang

SOFTWARE & CODE

- RIL- Reinforcement Learning Toolbox - C++ free download (http://www.igi.tugraz.at/ril-toolbox/)
- Dr. Mark Humphrys provides Q-Learning code in C++ using lookup table (http://www.compapp.dcu.ie/%7Ehumphrys/Notes/RL/Code/index.html)
- Kardi Teknomo's Q Learning by Example Matlab code and MS Excel (index.html)
- Check Sutton's Software page (Reinforcement Learning implementattion in C, C++ and Lisp) (http://www.cs.ualberta.ca/%7Esutton/software.html)
- Java Code of Reinforcement Learning (http://cs.gettysburg.edu/projects/javaRL/) provided by Gettysburg College. See the paper related to the code here (http://cs.gettysburg.edu/%7Etneller/papers/pdpta03.pdf) .
- Connectionist Q-learning Java Framework (http://elsy.gdan.pl/) is an Open Source Java library for developing simple or complicated learning systems
- Thierry Masson wrote Java applet of Q-learning (http://thierry.masson.free.fr/IA/en/qlearning_about.htm)

Q-LEARNING

- Zarul Hamzah essay: Are we learning now? (http://www.doc.ic.ac.uk/%7End/surprise_96/journal/vol2/zah/article2.html)
- Michael Bowling (http://www.cs.ualberta.ca/~bowling) reading for
- EPFL- Java Black Jack and Reinforcement Learning (http://lslwww.epfl.ch/~anperez/BlackJack/classes/RLJavaBJ.html) (Applet)

OTHER EXCELLENT RESOURCES

- AAAI - American Association for Artificial Intelligence (http://www.aaai.org/) Reinforcement learning page (http://www.aaai.org/AITopics/html/reinf.html)
- Reinforcement Learning Repository (http://www-anw.cs.umass.edu/rlr/)
- Reinforcment Learning warehouse AI Depot (http://reinforcementlearning.ai-depot.com/Main.html) (nice introduction)
- Machine Learning and Friends at CMU (http://www-2.cs.cmu.edu/Groups/reinforcement/web/homepage.html)

Books (references)

- Mitchell, T. M. (1997) Machine Learning, McGrawHill
- Sutton, R.S. and Barto, A.G. (1998), Reinforcement Learning (http://www.cs.ualberta.ca/%7Esutton/book/the-book.html) an Introduction, MIT Press

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