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Deep Reinforcement Learning for the JVM (Deep-Q, A3C)

[reinforcement-learning](#) [deeplearning4j](#) [doom](#) [cartpole](#) [a3c](#) [dqn](#) [gym-java-client](#)

🕒 104 commits

🔗 6 branches

📦 5 releases

👤 13 contributors

Branch: master ▾

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👤 agibsonccc committed on GitHub Merge pull request #38 from howard-abrams/threadhistory ...			Latest commit ddfc6c7 14 hours ago
📁 .github	Adds PR issue templates for Github (#29)	a month ago	
📁 contrib	Offer the option of automated formatting (#25)	2 months ago	
📁 rl4j-api	Fix API change from updater impl.	15 days ago	
📁 rl4j-core	Return thread with history processor attached	15 hours ago	
📁 rl4j-doom	Fix API change from updater impl.	15 days ago	
📁 rl4j-gym	Fix API change from updater impl.	15 days ago	
📄 .gitignore	Updated gitignore	8 months ago	
📄 LICENSE.txt	Public release	9 months ago	
📄 README.md	Update README.md	2 months ago	

 cartpole.gif	Cartpole.gif	9 months ago
 doom.gif	gif doom	9 months ago
 perform-release.sh	Add perform-release.sh script file and make updates for release	8 months ago
 pom.xml	Disable default automatic update of SNAPSHOT artifacts (#34)	22 days ago
 scoregraph.png	norender	9 months ago

README.md

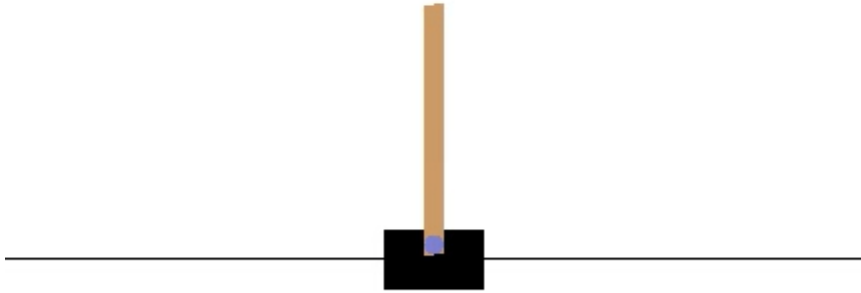
RL4J

RL4J is a reinforcement learning framework integrated with deeplearning4j and released under an Apache 2.0 open-source license. By contributing code to this repository, you agree to make your contribution available under an Apache 2.0 license.

- DQN (Deep Q Learning with double DQN)
- Async RL (A3C, Async NStepQlearning)

Both for Low-Dimensional (array of info) and high-dimensional (pixels) input.





Here is a useful blog post I wrote to introduce you to reinforcement learning, DQN and Async RL:

[Blog post](#)

[temporary example repo](#)

[Cartpole example](#)

Disclaimer

This is a tech preview and distributed as is. Comments are welcome on our gitter channel: [gitter](#)

Quickstart

**** INSTALL rl4j-api before installing all (see below)!****

- mvn install -pl rl4j-api
- [if you want rl4j-gym too] Download and mvn install: [gym-java-client](#)
- mvn install

Visualisation

[webapp-rl4j](#)

Quicktry cartpole:

- Install [gym-http-api](#).
- launch http api server.
- run with this [main](#)

Doom

Doom is not ready yet but you can make it work if you feel adventurous with some additional steps:

- You will need vizdoom, compile the native lib and move it into the root of your project in a folder
- export MAVEN_OPTS=-Djava.library.path=THEFOLDEROFTHELIB
- mvn compile exec:java -Dexec.mainClass="YOURMAINCLASS"

WIP

- Documentation
- Serialization/Deserialization (load save)
- Compression of pixels in order to store 1M state in a reasonable amount of memory
- Async learning: A3C and nstep learning (requires some missing features from dl4j (calc and apply gradients)).

Author

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Proposed contribution area:

- Continuous control
- Policy Gradient
- Update gym-java-client when gym-http-api gets compatible with pixels environments to play with Pong, Doom, etc ..

