Reproducible Science
Reinforcement Learning
Evolution

Vince: @drvinceknight
\[
\begin{bmatrix}
0 & 1 & 0 & 0 \\
1 & -1 & 1 & 1 \\
0 & 1 & -1 & 1 \\
0 & 1 & 0 & 0
\end{bmatrix}
\]
"The proof is left as an exercise for the reader."
You can download our code from the URL supplied. Good luck downloading the only postdoc who can get it to run, though

#overlyhonestmethods
The thing to take away from this whole panicked GitHub (backed by one of the largest software companies in the world) to GitLab (VC funded startup) exodus: you should be putting your code into long term archival like @ZENODO_ORG if you care about it being available.
Finally, they use @opentimestamps to submit hashes of the manuscript and source #Git commit to the #Bitcoin #Blockchain. These timestamps are immutable and irrefutable proof that the specified version of the manuscript existed at the specified time.

4/4

5:57 PM - 15 May 2018

1 Retweet 17 Likes
Heeding some of your suggestions about version control issues, I've just tried installing git.

I can't help but feel that it is designed to be borderline inaccessible so that people who do use it can be smug.
Software Sustainability Institute

https://www.software.ac.uk/
http://rse.ac.uk/
For example...
Me: sets up flawless heat competition trial, lizards will fight over hot podium, there can only be one winner!
Lizards:

#ALlizards2017
Me: sets up flawless heat competition trial, lizards will fight over hot podium, there can only be one winner!
Lizards:

#AAllizards2017
import axelrod as axl

players = (axl.TitForTat(), ...

axl.Match(players, turns=5).play()
[(C, C), (C, C), (C, C), (C, C), (C, C)]

players = (axl.TitForTat(), ...

axl.Match(players, turns=5).play()
[(C, D), (D, D), (D, D), (D, D), (D, D)]

players = (axl.TitForTat(), ...

axl.Match(players, turns=5).play()
[(C, C), (C, D), (D, C), (C, D), (D, C)]
>>> import axelrod as axl

>>> players = (axl.TitForTat(),
...            axl.Cooperator())
>>> axl.Match(players, turns=5).play()

[(C, C), (C, C), (C, C), (C, C), (C, C)]

>>> players = (axl.TitForTat(),
...            axl.Defector())
>>> axl.Match(players, turns=5).play()

[(C, D), (D, D), (D, D), (D, D), (D, D)]

>>> players = (axl.TitForTat(),
...            axl.Alternator())
>>> axl.Match(players, turns=5).play()

[(C, C), (C, D), (D, C), (C, D), (D, C)]

Robert Axelrod
Python/git - Axelrod's 'evolution of cooperation' trnmnt: [Blog post]: goo.gl/zkgSkc [github]: github.com/drvinceknight/… #gametheory

GitHub

drvinceknight/Axelrod
A repository used to reproduce Axelrod's tournament
FUNCTION K92R(J,M,K,L,R, JA)
C BY ANATOL RAPOPORT
C TYPED BY AX 3/27/79 (SAME AS ROUND ONE TIT FOR TAT)
c replaced by actual code, Ax 7/27/93
c T=0
c K92R=ITFTR(J,M,K,L,T,R)
   k92r=0
   k92r = j
c test 7/30
c write(6,77) j, k92r
c77 format(’ test k92r. j,k92r: ’, 2i3)
   RETURN
END
import axelrod_fortran
Rank including self interaction (MAE=1.492)
Rank including self interaction with python implementation of Champion (MAE=1.524)
Rank including self interaction with python implementation of all strategies (MAE=1.524)
Rank excluding self interaction (MAE=1.937)
Mean rank over every repetition (excluding self interaction) (MAE=2.254)
Lookerup
Gambler

Player

Opponent

(p_c, p_d)
Neural network

Player  Opponent

(6, 5, 9, ..., 1)

or
Finite State Machine

\[(C, C, 1) \rightarrow \text{D or C and } s \in \{1, 2, 3, 4\} \text{ (next state)}\]
import axelrod_dojo
<table>
<thead>
<tr>
<th>Player</th>
<th>Min</th>
<th>5th %</th>
<th>Mean</th>
<th>Median</th>
<th>95th %</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evolved FSM 16</td>
<td>0.000</td>
<td>0.0054</td>
<td>0.2096</td>
<td>0.079</td>
<td>0.7241</td>
<td>0.842</td>
</tr>
<tr>
<td>PSO Gambler 2.2.2</td>
<td>0.000</td>
<td>0.0113</td>
<td>0.2042</td>
<td>0.079</td>
<td>0.5940</td>
<td>0.842</td>
</tr>
<tr>
<td>EvolvedLookerUp2.2.2</td>
<td>0.000</td>
<td>0.0270</td>
<td>0.2014</td>
<td>0.079</td>
<td>0.6608</td>
<td>0.840</td>
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<td>0.0164</td>
<td>0.2014</td>
<td>0.079</td>
<td>0.5939</td>
<td>0.842</td>
</tr>
<tr>
<td>Evolved ANN 5</td>
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<td>0.0505</td>
<td>0.2004</td>
<td>0.079</td>
<td>0.5940</td>
<td>0.834</td>
</tr>
<tr>
<td>Evolved HMM 5</td>
<td>0.000</td>
<td>0.0321</td>
<td>0.1972</td>
<td>0.079</td>
<td>0.5940</td>
<td>0.842</td>
</tr>
<tr>
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<td>0.0455</td>
<td>0.1955</td>
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<tr>
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<td>0.0058</td>
<td>0.1955</td>
<td>0.079</td>
<td>0.5940</td>
<td>0.842</td>
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<tr>
<td>Evolved FSM 16 Noise 05</td>
<td>0.003</td>
<td>0.0607</td>
<td>0.1943</td>
<td>0.079</td>
<td>0.5930</td>
<td>0.842</td>
</tr>
<tr>
<td>PSO Gambler Mem1</td>
<td>0.000</td>
<td>0.0517</td>
<td>0.1920</td>
<td>0.079</td>
<td>0.6118</td>
<td>0.841</td>
</tr>
<tr>
<td>Evolved FSM 4</td>
<td>0.000</td>
<td>0.0000</td>
<td>0.1918</td>
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<td>0.5930</td>
<td>0.842</td>
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<tr>
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<td>0.000</td>
<td>0.0049</td>
<td>0.1869</td>
<td>0.079</td>
<td>0.5883</td>
<td>0.842</td>
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<tr>
<td>Evolved ANN 5 Noise 05</td>
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<td>0.0303</td>
<td>0.1858</td>
<td>0.079</td>
<td>0.5930</td>
<td>0.840</td>
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<tr>
<td>Omega TFT</td>
<td>0.003</td>
<td>0.0704</td>
<td>0.1849</td>
<td>0.079</td>
<td>0.5939</td>
<td>0.840</td>
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<tr>
<td>Fortress4</td>
<td>0.000</td>
<td>0.0000</td>
<td>0.1848</td>
<td>0.066</td>
<td>0.5919</td>
<td>0.840</td>
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<tr>
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<td>0.0041</td>
<td>0.1846</td>
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<td>0.6190</td>
<td>0.842</td>
</tr>
<tr>
<td>Player</td>
<td>Min</td>
<td>5th %</td>
<td>Mean</td>
<td>Median</td>
<td>95th %</td>
<td>Max</td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>--------</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1 CS</td>
<td>0.921</td>
<td>0.9970</td>
<td>0.9984</td>
<td>1.000</td>
<td>1.0</td>
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<tr>
<td>2 TF1</td>
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<td>0.9950</td>
<td>0.9973</td>
<td>0.999</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td>3 TF2</td>
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<td>0.9820</td>
<td>0.9949</td>
<td>0.996</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td>4 Predator</td>
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<td>0.9912</td>
<td>0.9941</td>
<td>0.999</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>5 Prober 4</td>
<td>0.895</td>
<td>0.9110</td>
<td>0.9863</td>
<td>0.996</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td>6 Handshake</td>
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<td>0.9592</td>
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<td>13 TF3</td>
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<td>0.9582</td>
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<td>14 Davis</td>
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<tr>
<td>15 Retaliate 3</td>
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<td>0.9580</td>
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<td>16 Retaliate</td>
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<td>0.9576</td>
<td>0.921</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>
And I really wanted to thank you all, I discovered your project because of a course where we needed to participate in an open source project, and I had the occasion to compare the welcome me and my coworkers received here compared to other people from my class who worked on different project. And I’ve got to said you are awesome on that part and on the help your provide to newbies I like your project so I’ll try to continue to contribute now and then!