

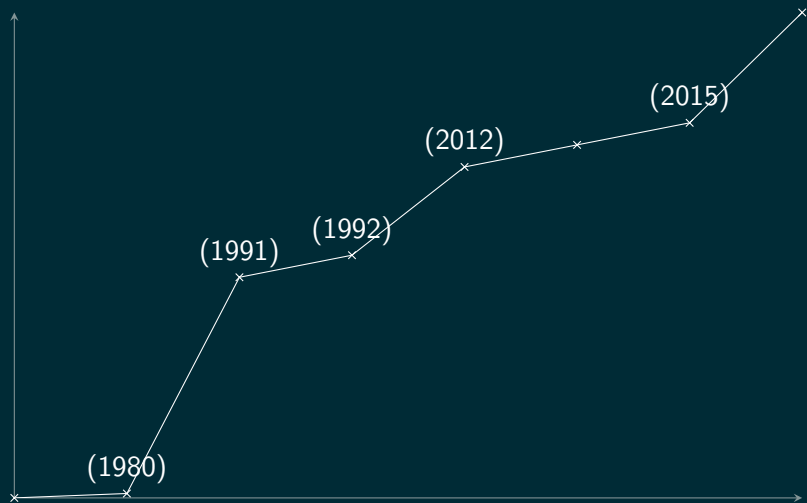
Prisoners and Spatial Structure

Nikoleta Glynatsi

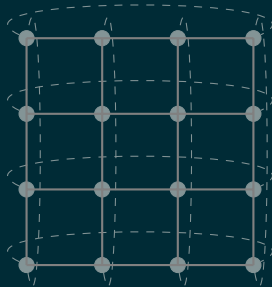


SWORDS, October 2016

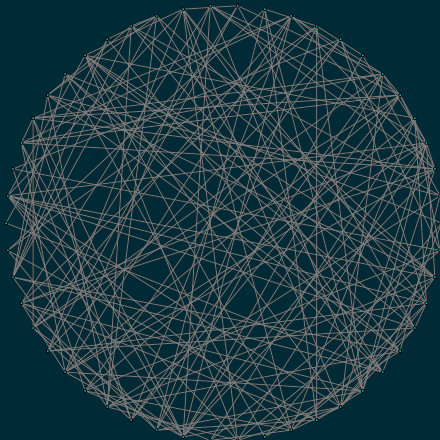
History Line



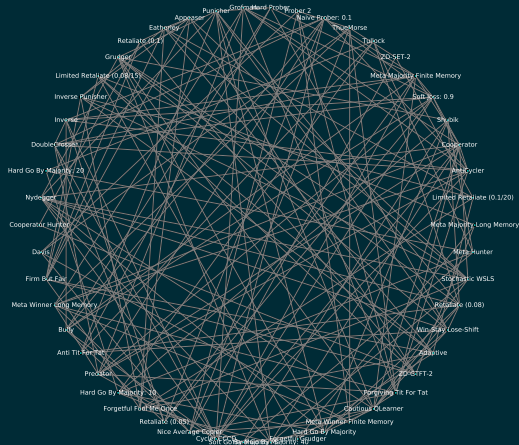
Nowak and May, 1992



What do real life interactions look like?



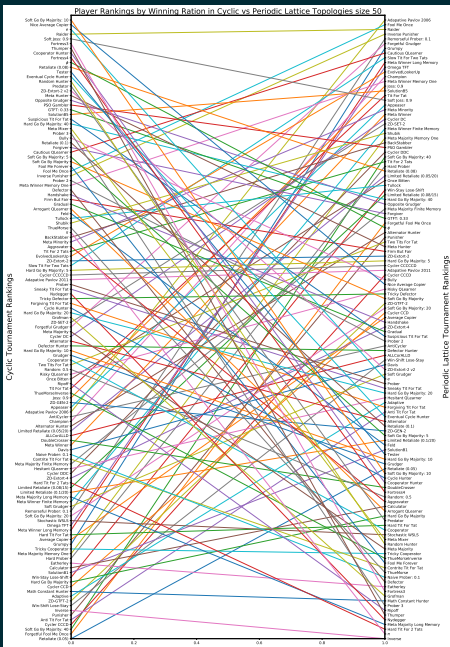
What do real life interactions look like?



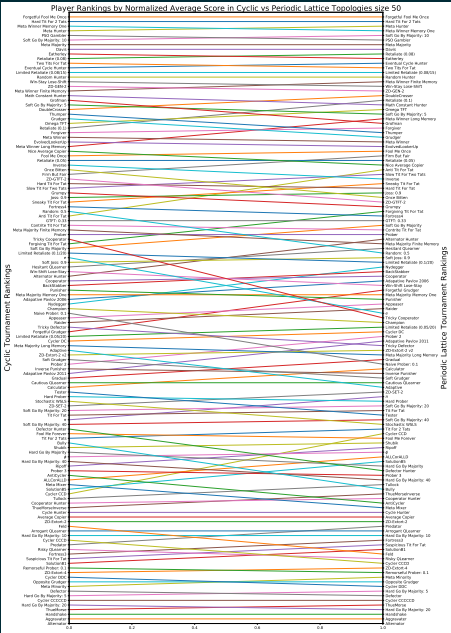
Experiments

- Simple Networks
- Complex Networks

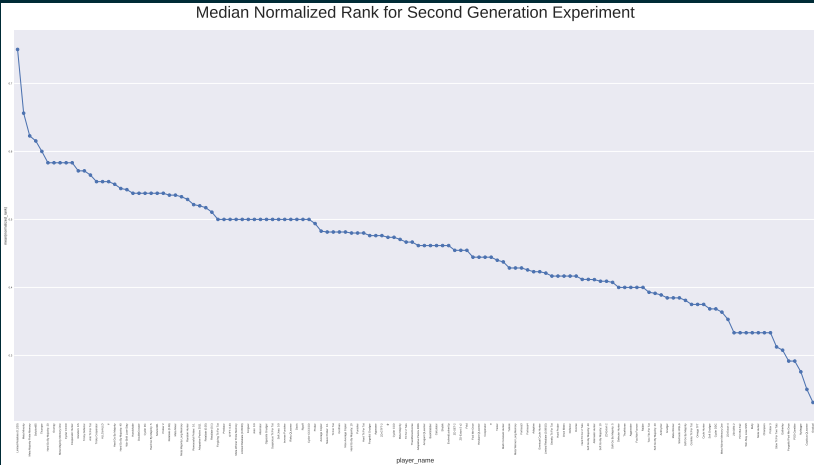
Winning Ratio



Normalised Average Score




Normalised Median Rank




Training a Strategy using Genetic Algorithm

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MOJONES.NET

Evolving strategies for an Iterated Prisoner's Dilemma tournament

[Date](#)  Fri 04 December 2015

[Category](#) [programming](#)

[Tags](#) [python](#) / [evolution](#) / [axelrod](#) / [prisoners dilemma](#) / [game theory](#)

Heads up to readers: this is a long article with lots of code samples and interactive charts. If you're reading on a mobile device, you might want to save this one until you can get to a wider screen! It may take a while to load all the charts.


Introduction

This is a longish post about using a simple evolutionary algorithm in Python to create a strategy for playing the famous Prisoner's Dilemma game (actually, the version known as Iterated Prisoner's Dilemma, hereafter referred to as IPD). If you're not already familiar with the Prisoner's Dilemma, take a look at the first bit of the [Wikipedia](#) page and the section on Iterated Prisoner's Dilemma. You might also want to watch this [short video](#) and take a look at [this blog post](#).


About Martin Jones
Coding, writing and teaching


My books

Python for Biologists



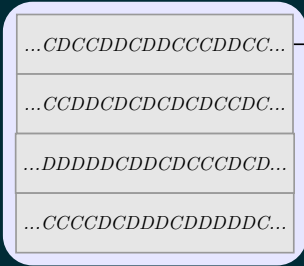
Evol

 Highlight All

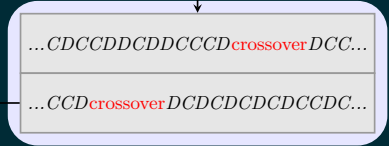
 Match Case

1 of 4 matches

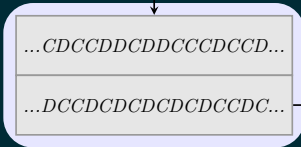
Parents:



Crossovers:



Children:



Mutation:



Conclusions and Futher Research

Conclusions

- The topology affects the strategies performance
- Using regression we can predict 2/132 strategies behaviour
- None of the 132 strategies performed well in all experiments
- For specific spatial tournaments a satisfactory strategy has been trained

Further Research

- Generate more data
- Run genetic algorithm for more generations
- Logistic regression & random forest analysis
- Evolutionary and Probabilistic endings tournaments

@NikoletaGlyn

<https://github.com/Nikoleta-v3>

<https://github.com/Axelrod-Python/Axelrod>