

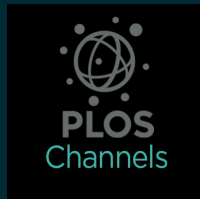
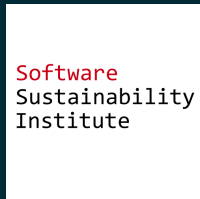
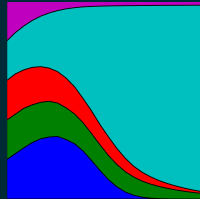
Stability of defection, optimisation of strategies and testing for extortion in the Prisoner's Dilemma

Nikoleta E. Glynatsi

Dr Vincent Knight

Dr Jonathan Gillard

Dr Marc Harper

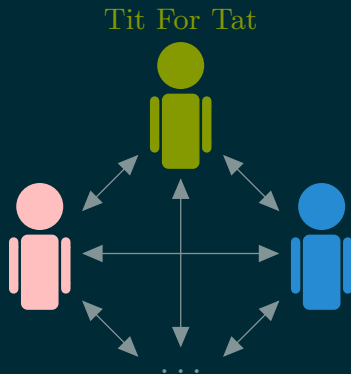


NICE? NOT NICE?



$$S_p = \begin{pmatrix} 3 & 0 \\ 5 & 1 \end{pmatrix} \quad S_q = \begin{pmatrix} 3 & 5 \\ 0 & 1 \end{pmatrix}$$

Effective Choice in the Prisoner's Dilemma - Robert Axelrod, 1980



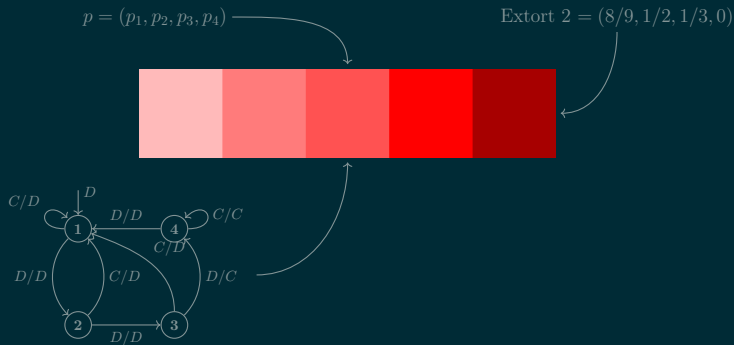
Iterated Prisoner's Dilemma contains strategies that dominate any evolutionary opponent - William H. Press and Freeman J. Dyson, 2012



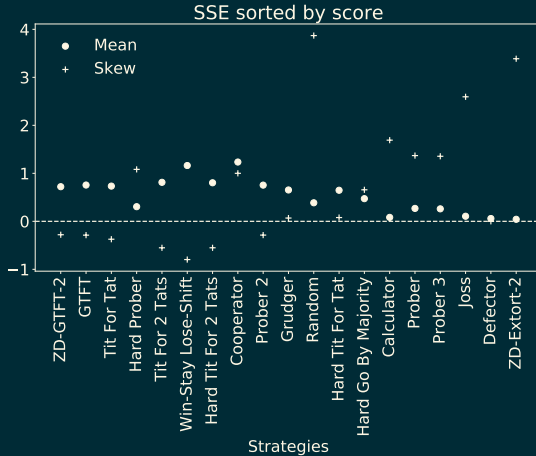
$$p = (p_1, p_2, p_3, p_4)$$

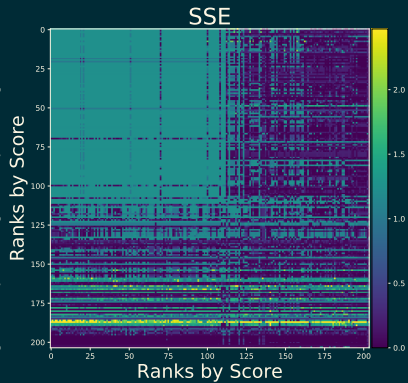
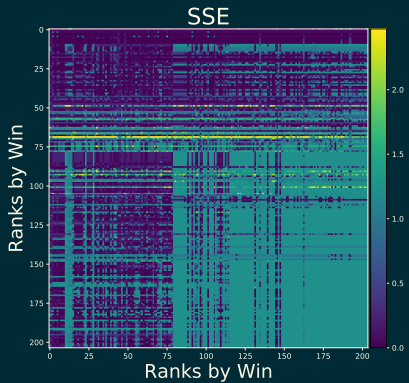
$$(S_P - P) = \chi(S_Q - P)$$

Recognising and evaluating the effectiveness of extortion in the Iterated Prisoner's Dilemma - Vincent A. Knight, Marc Harper, Nikoleta E. Glynatsi and Jonathan Gillard, 2019

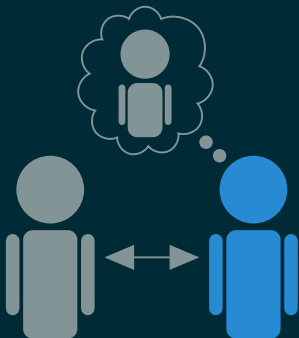


Extortion and cooperation in the Prisoner's Dilemma - A. J. Stewart and J. B. Plotkin., 2012





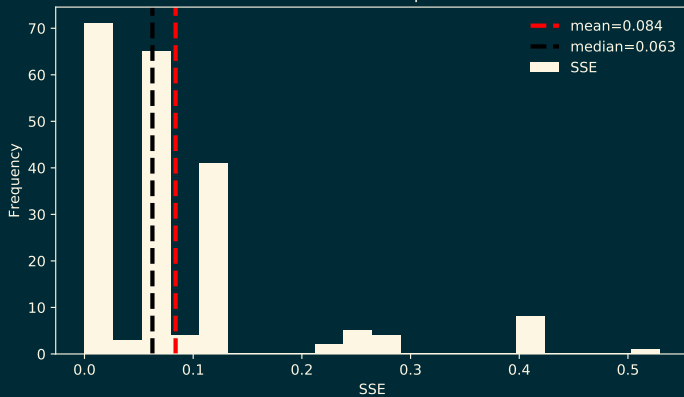
Stability of defection, optimisation of strategies and the limits of
memory in the Prisoner's Dilemma - Nikoleta E. Glynnatsi and
Dr Vincent Knight



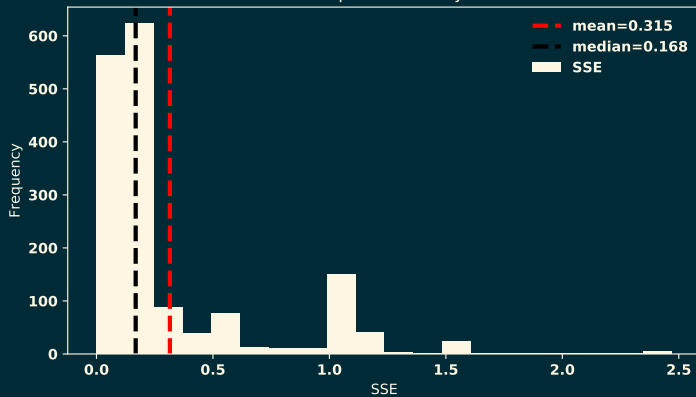
$$u_q(p) = \frac{\frac{1}{2} p Q p^T + c p + a}{\frac{1}{2} p \bar{Q} p^T + \bar{c} p + \bar{a}}$$

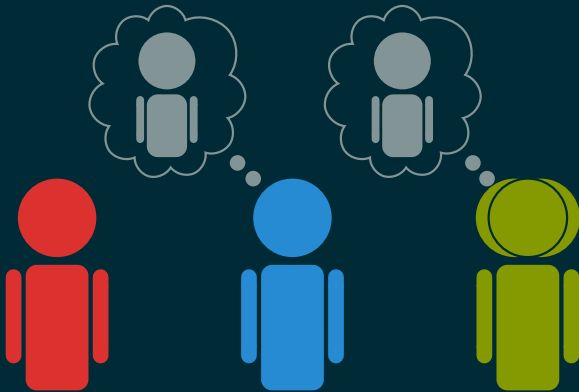
$$p^* = \operatorname{argmax}_p u_q(p)$$

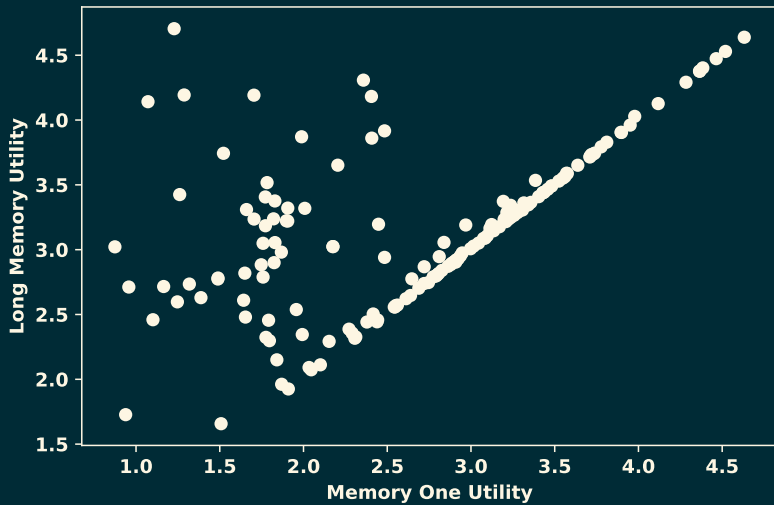
EvolvedLookerUp2 2 2



Best Response Memory One









- ZD strategies are not adaptable.



- Extortion is not optimal.



- Longer memory is beneficial.

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<https://arxiv.org/abs/1904.00973>



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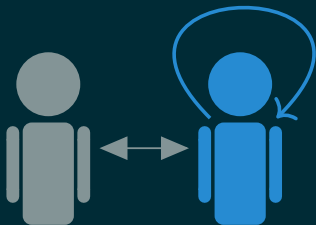
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"Recognising and evaluating the.." is the #1 paper on Arxiv today in computer science and game theory. Github code (testing...) supports their results. Congrats @joelvincent @NikoletaGlyn. See it at assert.pub/arxiv/cs/cs.gt + assert.pub/papers/1904.00.... Please retweet.

11:21 PM - 1 Apr 2019

Stability of defection, optimisation of strategies and the limits of memory in the Prisoner's Dilemma - Nikoleta E. Glynatsi and Dr Vincent Knight



$$p^* = \operatorname{argmax}_p u_q(p) + u_{p^*}(p^*)$$

