An Irish, a Scot & an English agent walked into a bar: ChatGPT stayed @ home & adapted the El Farol model to know why?

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Poster Abstract

There are few expert Agent-Based modellers freely available to help debug code or help with model design. How can Open Ai Chat GPT (1) help students learn ABM (2) in NetLogo (3)? The El Farol model (4) by W. Brian Arthur (5) is inputted into ChatGPT. and is prompted to give ideas on different behaviours for the different agents based on the Irishman, Englishman, and Scotsman joke. ChatGPT version of the El Farol bar game theoretic multi-agent problem.

ChatGPT can be used to create a conversational interface that allows non-programmers to describe the behaviour they want their agents to exhibit in natural language, which can then be translated into NetLogo code. It can analyse data generated by NetLogo models and generate natural language descriptions of the patterns that emerge, which can be useful for communicating results to a broader audience. ChatGPT can generate natural language descriptions of scenarios that can be used to test NetLogo models, helping users identify potential issues or test different variations of the model. It can provide natural language explanations of NetLogo code and answer questions about programming in NetLogo, which can be useful for users who are new or struggling to understand a particular concept.

The original El Farol bar problem is a simple model of how individuals make decisions based on incomplete information, and it demonstrates how seemingly rational decisions can lead to collective suboptimal outcomes. Chat GPT is prompted with the NetLogo code of the El Farol model, then it is prompted so each agent represents one of the 3 characters in the Irishman, Scotsman and Englishman joke. The results suggested by ChatGPT are instead of a strategy for each agent attending the bar, each agent has a joke telling behaviour.

The generated model can be extended by modelling the differences in decision rules between an Irishman, Englishman, and Scotsman that could represent cultural differences in decision-making styles. The Irishman agent could use a rule that favours a more social approach, such as attending the bar if they expect a large number of their friends to be there. While the Englishman agent could be more reserved, such as using a rule that favours a more individualistic approach, such as attending the bar only if they personally want to go and are not influenced by the opinions of others. The Scotsman agent could be more pragmatic and use a rule that's based on the cost-benefit analysis, like attending the bar if the expected benefit of going outweighs the expected costs. The model shares some similarities with the El Farol bar problem, in that it simulates the behaviour of agents in a complex system. It also shares similarities with other ABMs that simulate the behaviour of individuals in social or economic settings, such as the Ultimatum Game, the Prisoner's Dilemma, or the Minority Game. Ghat GPT may be useful in training student to programme in NetLogo by repurposing model code from the NetLogo library.

References.

Open Ai Available online https://openai.com/blog/chatgpt/

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This model is inspired by a paper by W. Brian Arthur.

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