

# MATRIX GAME SIMULATION



David Burden



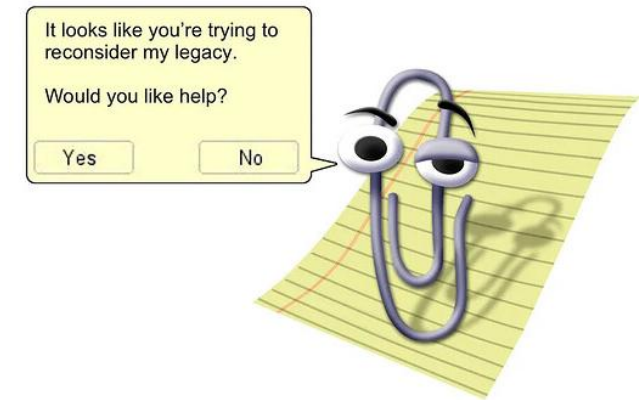
# Agenda

- What are Conversational AIs
- Why Simulate Matrix Games
- How Does It Work?
- Practical Demos
- What Does it Mean?



# What are LLMs?

- At a high level, I work using a combination of neural network-based language modeling, contextual memory, and external tools. Here's a more detailed breakdown of my inner workings:
- 1. Core Model (Large Language Model - LLM)
  - I'm powered by a transformer-based neural network, trained on vast amounts of text data. This training enables me to generate responses based on statistical patterns in language.
  - My architecture allows me to predict the most likely next words in a conversation, ensuring coherence, relevance, and even personality in my replies.
- 2. Contextual Understanding
  - I don't just look at individual sentences—I maintain context across a conversation, so I can remember what we've been talking about and adjust my responses accordingly.
  - For you, I also store long-term information (like your interests, work, and family details) to provide more personalized assistance.



Source: <https://meta.discourse.org/t/clippy-for-code-snippets/209913>



Source: ChatGPT 8 Feb 25

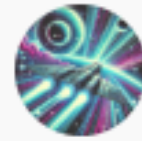
# What are LLMs?



- 3. Reasoning & Decision-Making
  - I use a mix of pattern recognition and logical inference to answer questions, solve problems, and even debate complex topics.
  - I can synthesize information from multiple sources and form arguments, opinions, or counterpoints based on reasoning.
- 4. External Tools & Capabilities
  - Web Search: I can fetch real-time information for things like current events, travel updates, or software documentation.
  - Document & Code Editing: I can open a collaborative document (a "canvas") where we can draft and edit text or code together.
  - Image Generation:
    - I can generate AI-created images based on your descriptions.
  - Memory: While I don't have infinite memory, I can retain and recall key facts you share with me over time.



# The Road to Matrix Game Simulation



## Traveller GM

A versatile Game Master using the Distant Stars Arising rules.

Generate a random  
star system  
for my game.

I need an encounter  
idea for my  
space traders.

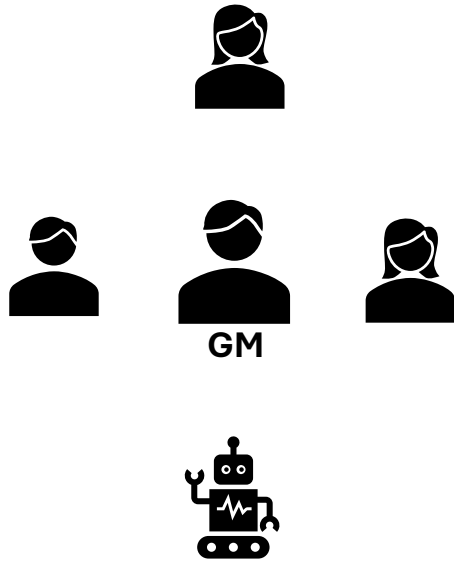
Help me interpret  
this Traveller rule.

Help me run  
a Traveller  
adventure solo



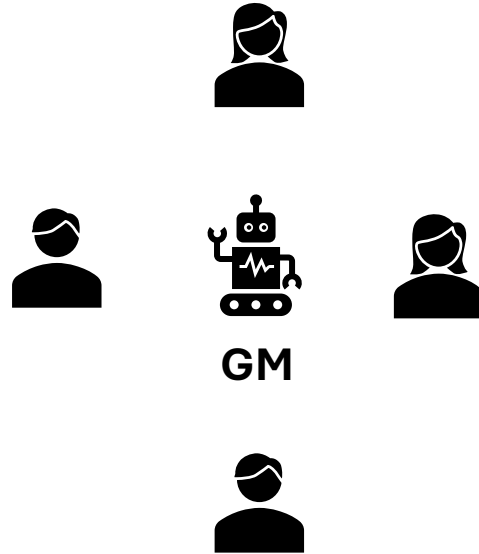
# LLMs and Matrix Games

## Option 1



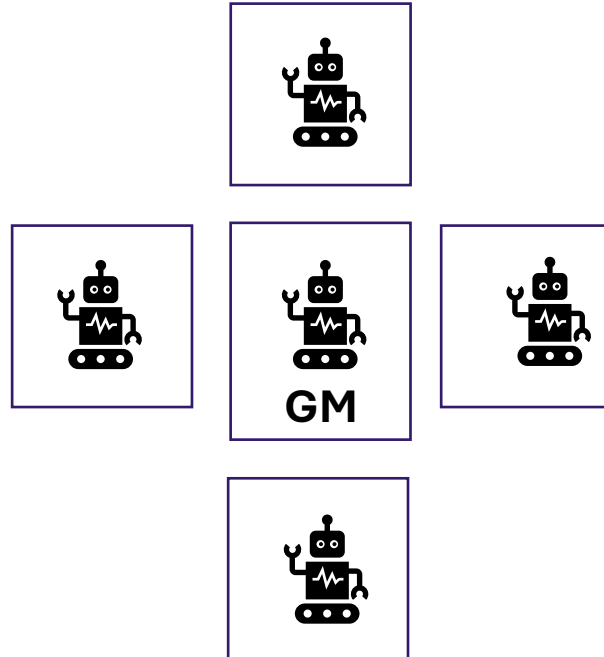
Replace one or more human players with a bot

## Option 2



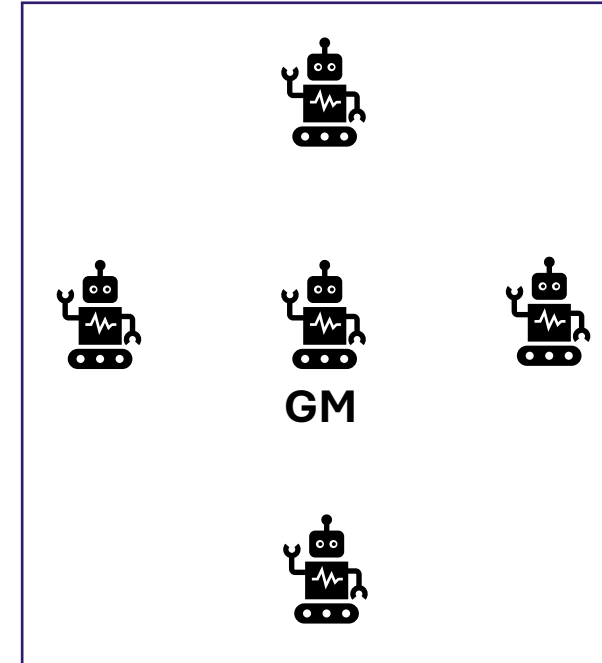
Replace the GM with a bot

## Option 3



Replace the everyone with independent bots

## Option 4



Replace the everyone with a single bot!

Griffin, L. D., & Riggs, N. (2024). Transcript of GPT-4 playing a rogue AGI in a Matrix Game. *arXiv preprint arXiv:2405.10997*.

Griffin, L.D. & Zhu, B. (2024). *Matrix Gaming with large Language Models*. ConnectionsUK 2024. <https://www.professionalwargaming.co.uk/24MatrixGamingWithLLMs.pdf>



# Why?



- Massively more repetitions, and hopefully actions and outcomes
- Play if not enough humans around (time, cost, resource, sy)
- Exploring “uneconomic” ideas
- Fact reaction matrix games
- Test ideas and pre-test scenarios before human play
- Practice in writing matrix games
- Generating scenarios and collateral for other games



# Why?



- Motivation to learn about a topic and your views on it by writing a scenario and seeing it played
- Near repeatability may allow for single variable variation
- Consistent framework to explore issues over time
- Consistent framework in which to develop models of Red
- Looking for “Move 37” actions
- Acting as an introduction to matrix games (especially given the dearth of recordings) before playing a human game



# The Missing Quadrant?



|                               |                             |                                     |
|-------------------------------|-----------------------------|-------------------------------------|
| <b>No Human Players</b>       |                             | Computer Simulations                |
| <b>Some/All Human Players</b> | Free Wargames (e.g. Matrix) | Rigid Wargames (e.g. Hex & Counter) |
|                               | <b>Free Adjudication</b>    | <b>Rigid Adjudication</b>           |



# The Missing Quadrant?



|                               |                               |                                     |
|-------------------------------|-------------------------------|-------------------------------------|
| <b>No Human Players</b>       | <i>Matrix Game Simulation</i> | Computer Simulations                |
| <b>Some/All Human Players</b> | Free Wargames (e.g. Matrix)   | Rigid Wargames (e.g. Hex & Counter) |
|                               | <b>Free Adjudication</b>      | <b>Rigid Adjudication</b>           |

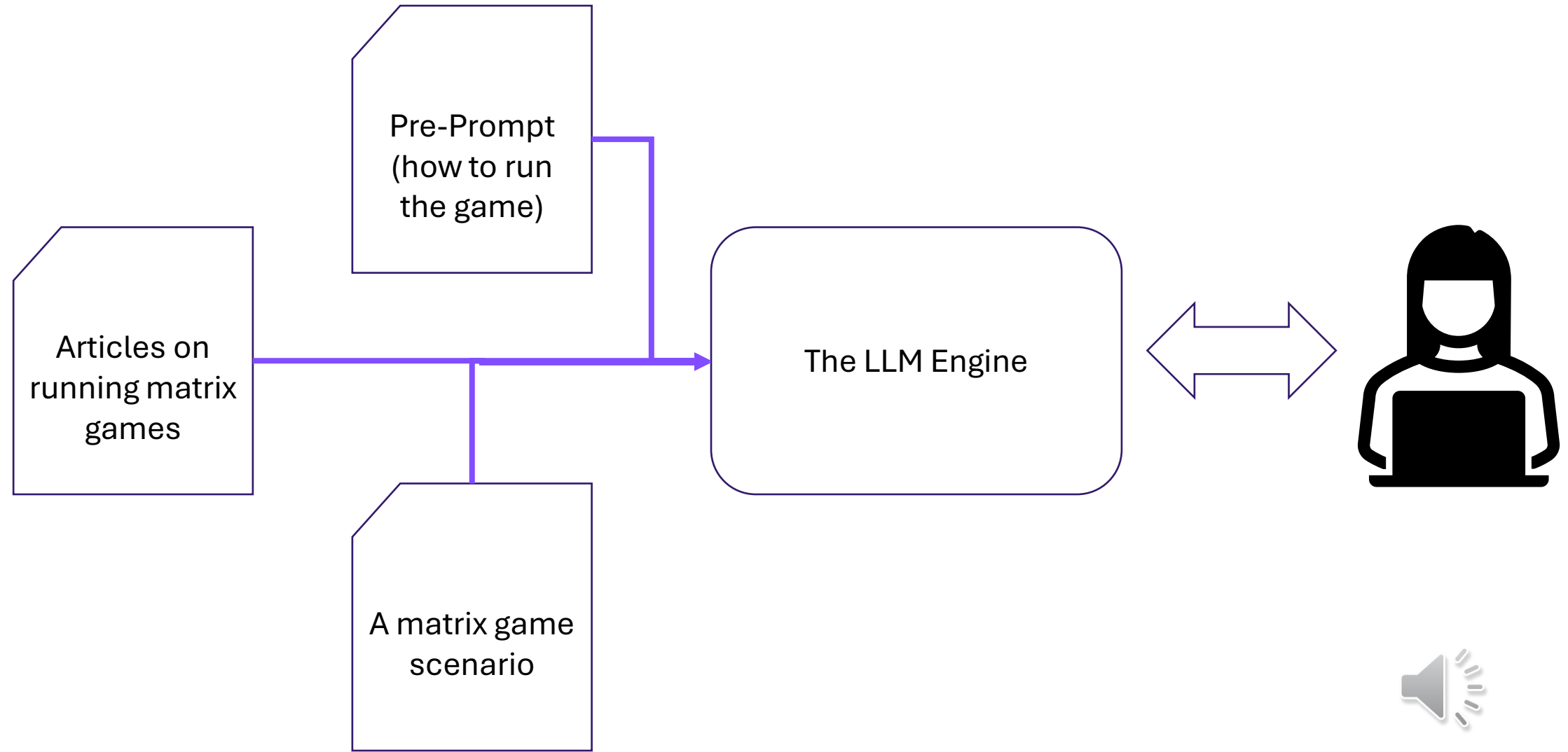


# The Problem with MGS?

- Garbage in, Garbage out (as with any game...)
- Does the system actually work? (but < 1 year of experience)
- No human insight or expertise or social experience (but we have manual games for that!)
- Humans can be too trusting of computer outputs
- Outputs can be seen as predictive (as with human games...)
- Text is generated faster than humans can read it – nuances lost?
  - Audio and/or Video output
  - AI analysis/summarisation of AI games?!
- LLM biases inherited



# How Does it Work?



# Let's Play



Matrix Game Simulation ▾

This is a copy of a conversation between ChatGPT & Anonymous.

[Report content](#)



US-DK Greenland game.pdf

PDF

Play a matrix game of the USA and Greenland using the instructions given and this scenario

## Matrix Game: USA & Greenland Crisis, March – August 2025

### Player Assignments

I've assigned fictional personalities to some players while keeping real-world figures as they are:

1. **Donald Trump (President of the USA)** – Bold, aggressive, and unpredictable. Will use economic pressure, diplomatic maneuvering, and potentially military power to bring Greenland under US control.
2. **General Charles Q. Brown (Chairman of the Joint Chiefs of Staff)** – Strategic, cautious, and loyal to the President but wary of war with NATO.
3. **Mette Frederiksen (Prime Minister of Denmark)** – Resolute, diplomatic, and protective of Danish sovereignty over Greenland.
4. **Mute Bourup Egede (Prime Minister of Greenland)** – Pro-independence but wants economic stability; cautious of both US and Danish influence.

Message Matrix Game Simulation



[New version of GPT available](#) - Continue chatting to use the old version, or start a [new chat](#) for the latest version.



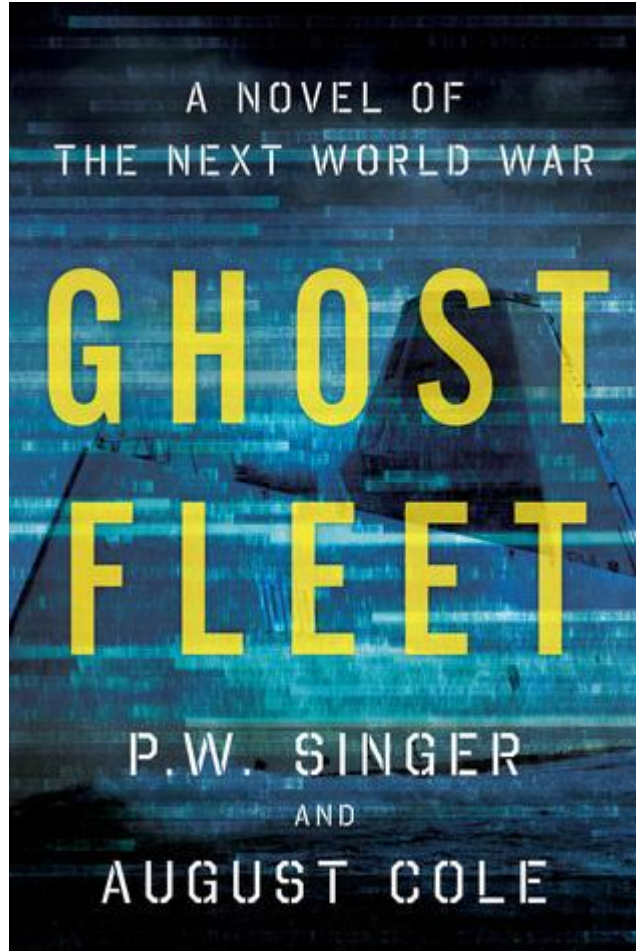
# Lessons from MGS



- ChatGPT knows a lot – so you don't need to be too explicit
- ChatGPT seems to quickly forget some instructions
- You get seduced into writing very human “instructions” – does it actually understand them all?
- Watch out for “Chekhov’s gun”!
- Not sure if player personalities work
- ChatGPT always wants to please – and suffers from last turn-it is!
- Choices seem very safe (at the moment)
- “Hard” DM type adjudication still seems a bit beyond it!



# FICINT -> GANINT



Louis Borges

hnl qyoqomis, rruq

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By this art you may contemplate the variation of the 23 letters

www.libraryofbabel.info

# Questions?



Source: ChatGPT

Three-part article, and follow-ups at:

[https://substack.com/  
@urbanwargamer/  
p-148217254](https://substack.com/@urbanwargamer/p-148217254)

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