

Leverage AI Tools to Accelerate Learning in Data Science

Matt Hamilton

Co-founder, Head of DevRel - ASIMOV Protocol

My Journey

**University (CompSci) → Netsight → enquo
→ IBM → Ripple → Protocol Labs →
Arbitrum → ASIMOV**

- Moved to Barbados in 2020 on the Welcome Stamp during the pandemic
- Building blockchain/AI systems from here
- Paddleboarding with my dogs
- Wukkin up (with a concrete waistline)



Today's Plan

1. Context
2. Real Projects from Barbados
3. AI Tools You Can Use Today
4. ⚡ Prompting Challenge
5. Context Engineering
6. AI Toolkit
7. Careers & Next Steps

From Sugar Cane to Source Code

- Barbados exports: sugar cane, tourism, culture → what else can we export?
- AI is the great equalizer – all you need is a laptop and internet
- You can build tools the world uses, from right here



The Context

“ The AI revolution is not being written in Silicon Valley... it's coming from Manila, from Bridgetown, from Nairobi ”

Kate Kallot, Founder & CEO, Amini
AI For Good Summit, 2025



The AI Revolution

- <1% of data centers in Africa (and none in Barbados!)
- Constraint = innovation
- Local context creates better AI



The Great Shift

Then: You needed steel mills,
factories, oil rigs

Now: Laptop + LLM + curiosity

Global competition has been
democratized.



Workshop Goals

- ✓ Use AI tools as creators, not just consumers
- 🔧 Learn real-world prompting skills
- 🎯 Build smarter, not bigger
- 🌐 Solve local problems with global relevance

Real Projects from Barbados

Proof AI isn't just for Silicon Valley

WeOutside246.com

Problem: Events scattered on IG

Solution: AI finds and structures event data

- LLMs (OpenAI) + Python
- Instagram scraping using Apify
- Event tagging & parsing
- Scheduled tasks run on Google Cloud Run



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The screenshot displays a grid of event posts from a social media platform. At the top, a large banner features the text "We Outside!" and a subtitle about the hottest fetes in Barbados. Below this, the main feed shows several event cards:

- Tipsy Music Festival 2025: Day 1 at TMF Beach**: Sat, Jul 19. TMF Beach, Copacabana Beach Club, Barbados. Includes tags: Soca, Cropover, Beach, Music, Fete, Festival, Party.
- Scotiabank Junior Monarch Finals 2025**: Sat, Jul 19. Willey Gymnasium, Garfield Sobers Complex, Willey, St. Michael, Barbados. Includes tags: Soca, Cropover, Beach, Music, Fete, Calypso.
- Sunshine Snacks AffinityPlus Junior Kadootment 2025 at National Botanical Gardens**: Sat, Jul 19. National Botanical Gardens, Bridgetown, Barbados. Includes tags: Family, Culture, Fete, Jouvert, Junior, Masquerade, Other, Cultural.
- Twistedbarbados and barbados**: 52.3K followers. Includes a profile picture of a man and a link to their Instagram account.
- Scotiabank JUNIOR MONARCH FINALS**: Saturday, July 19, 2025. Willey Gymnasium, Garfield Sobers Complex, Willey, St. Michael. Includes a QR code and a link to the event's website.
- Pilgrim Road Customer Appreciation Day with Live Performances**: Sat, Jul 19. Carter's Pilgrim Road, Christ Church, Barbados.
- Pop-Up Party at De Thirsty Lizard**: Sat, Jul 19. De Thirsty Lizard, Bridgefield, St Thomas, Barbados. Includes tags: Native, Shipwrecked, Vibe Land, Scorch Bim.
- Junior Kadootment & Junior Monarch Finals 2025**: Sat, Jul 19. National Botanical Gardens and Garfield Sobers.

The screenshot displays a grid of event posts from a social media platform, continuing from the previous feed.

- Rosé Brunch at The View (Crop Over Season Launch)**: Sat, Jul 19. The View: Kitchen + Bar. Includes tags: Brunch, Music, Cropover.
- Motion: The Beach Party at Copacabana**: Sat, Jul 19. Copacabana, Barbados. Includes tags: Beach, Cropover, Soca, Party.
- Souse, Rum & Soca x School Hall Back to School Fete**: Sat, Jul 19. THE Third Bar – Top of Rendezvous Hill, Barbados. Includes tags: Soca, Cropover, Music, Fete.
- View more on Instagram**: Includes a thumbnail for the Rosé Brunch event.
- Unmasked Sandi Gras Beach Masquerade**: Sat, Jul 19. Paul Owens at The Beach House, Barbados. Includes tags: Cropover, Beach, Music, Masquerade.
- Buzz Crop Over Edition**: Sat, Jul 19. Zouk Night Lounge, Barbados. Includes tags: Soca, Cropover, Music, Party.
- Trouble in Paradise: Cropover 2025 Schedule**: Sat, Jul 19. Barbados. Includes tags: Soca, Cropover, Music, Cruise, Jouvert, Beach.
- Cropover 2025 SCHEDULE**: Includes a thumbnail for the Buzz Crop Over Edition event.

LLM Data Extraction

twistedbarbados and 3 others

twistedbarbados The beach vibes 'bout to be serious! 🌴☀️🔥 TMF Weekend kicks off on Saturday, July 19 with Day 1: beachwear, big vibes and pure bliss 🌴☀️

Here's your DJ lineup bringing the heat to @copacabanabb

Jus Jay
Ovadose
Surf Rat & Menace
Legacy Team
DJ C Four
Raw Gas

Don't get caught outside 🌴 grab those tix NOW cuz entry by ticket only! 🎟️

⚠️ Warning: This ain't no ordinary beach party - issa BEACH FETE. 🌴 Vibes? Mad. Energy? Certified. Let's go! 🎉

DAY 1 - TMF Beach 🌴
Saturday, July 19, 2025
12PM - 8PM
\$120.00 BBD

Purchase online 🎟️ link in bio or at these official Box Offices:
• Sole Addiction - Broadstreet, Bridgetown
• Forever Blessed - Tudor Street, Bridgetown
• Intermixz - Sky Mall and Sheraton Mall
• Supernova - Sheraton Mall
• 11th Street Boutique - Domini Mall
• DSK Clothing Wear - Kensington Mall
• Day and Night Boutique - The Walk, Welches
• Backyaad Restaurant - Hastings
• Imart Pharmacy - Six Roads, Lanterns & The Walk, Welches
• Excuse Me Miss - Roebuck Street, Bridgetown
• Rubis Coverly

TMF WEEKEND PASS (Day 1 + Day 2)
\$265.00 BBD

#TMF2025 #TMFBeach #Day1Loading #TipsyMusicFestival
#SupportLocal 🇭🇹 #TMFBarbados
#TipsyMusicFestivalBarbados #TopsyBarbados
#TwistedEntertainment #TwistedBarbados #TwistedFam
#Barbados #Cropover #GetYourTickets

Edited - 1d

1 day ago

Add a comment... Post

```
1 {  
2   "artists": [  
3     "Jus Jay",  
4     "Ovadose",  
5     "Legacy Team",  
6     "Surf Rat & Menace",  
7     "C-Four",  
8     "Raw Gas"  
9   ],  
10  "isEvent": true,  
11  "location": "Copacabana Beach Club, Barbados",  
12  "eventDate": "2025-07-19",  
13  "eventName": "TMF Beach - Tipsy Music Festival Day 1 at Copacabana Beach Club",  
14  "eventType": [  
15    "SOCA",  
16    "CROPOVER",  
17    "BEACH",  
18    "MUSIC",  
19    "FETE"  
20  ],  
21  "reasoning": "The image is a professional event poster for 'Tipsy Music Festival' Day 1, clearly stating the date (19th July 2025), time (12PM-8PM), and location (Copacabana Beach Club, Barbados). The caption and hashtags reinforce the Barbados location and Crop Over context. The DJ lineup matches both the image and caption. The event is a beach party/fete with strong soca and Crop Over associations, and all details are presented in English. No conflicting location or date info is present.",  
22  "confidence": 98,  
23  "validUsernames": [],  
24  "extractedContent": {  
25    "text": "The beach vibes 🌴 'bout to be serious! 🌴☀️🔥 TMF Weekend kicks off on Saturday, July 19 with Day 1: beachwear, big vibes and pure bliss 🌴☀️\n\nHere's your DJ lineup bringing the heat to @copacabanabb\n\nJus Jay\nOvadose\nSurf Rat & Menace\nLegacy Team\nDJ C Four\nRaw Gas\n\nDon't get caught outside 🌴 grab those tix NOW cuz entry by ticket only! 🎟️\n\n⚠️ Warning: This ain't no ordinary beach party - issa BEACH FETE. 🌴 Vibes? Mad. Energy? Certified. Let's go! 🎉\n\nDAY 1 - TMF Beach 🌴\nSaturday, July 19, 2025\n12PM - 8PM\n$120.00 BBD\n\nPurchase online 🎟️ link in bio or at these official Box Offices:\n• Sole Addiction - Broadstreet, Bridgetown\n• Forever Blessed - Tudor Street, Bridgetown\n• Intermixz - Sky Mall and Sheraton Mall\n• Supernova - Sheraton Mall\n• 11th Street Boutique - Domini Mall\n• DSK Clothing Wear - Kensington Mall\n• Day and Night Boutique - The Walk, Welches\n• Backyaad Restaurant - Hastings\n• Imart Pharmacy - Six Roads, Lanterns & The Walk, Welches\n• Excuse Me Miss - Roebuck Street, Bridgetown\n• Rubis Coverly\n\nTMF WEEKEND PASS (Day 1 + Day 2)\n$265.00 BBD\n\n#TMF2025 #TMFBeach #Day1Loading #TipsyMusicFestival\n#SupportLocal 🇭🇹 #TMFBarbados\n#TipsyMusicFestivalBarbados #TopsyBarbados\n#TwistedEntertainment #TwistedBarbados #TwistedFam\n#Barbados #Cropover #GetYourTickets"}  
}
```

YuhHearDem

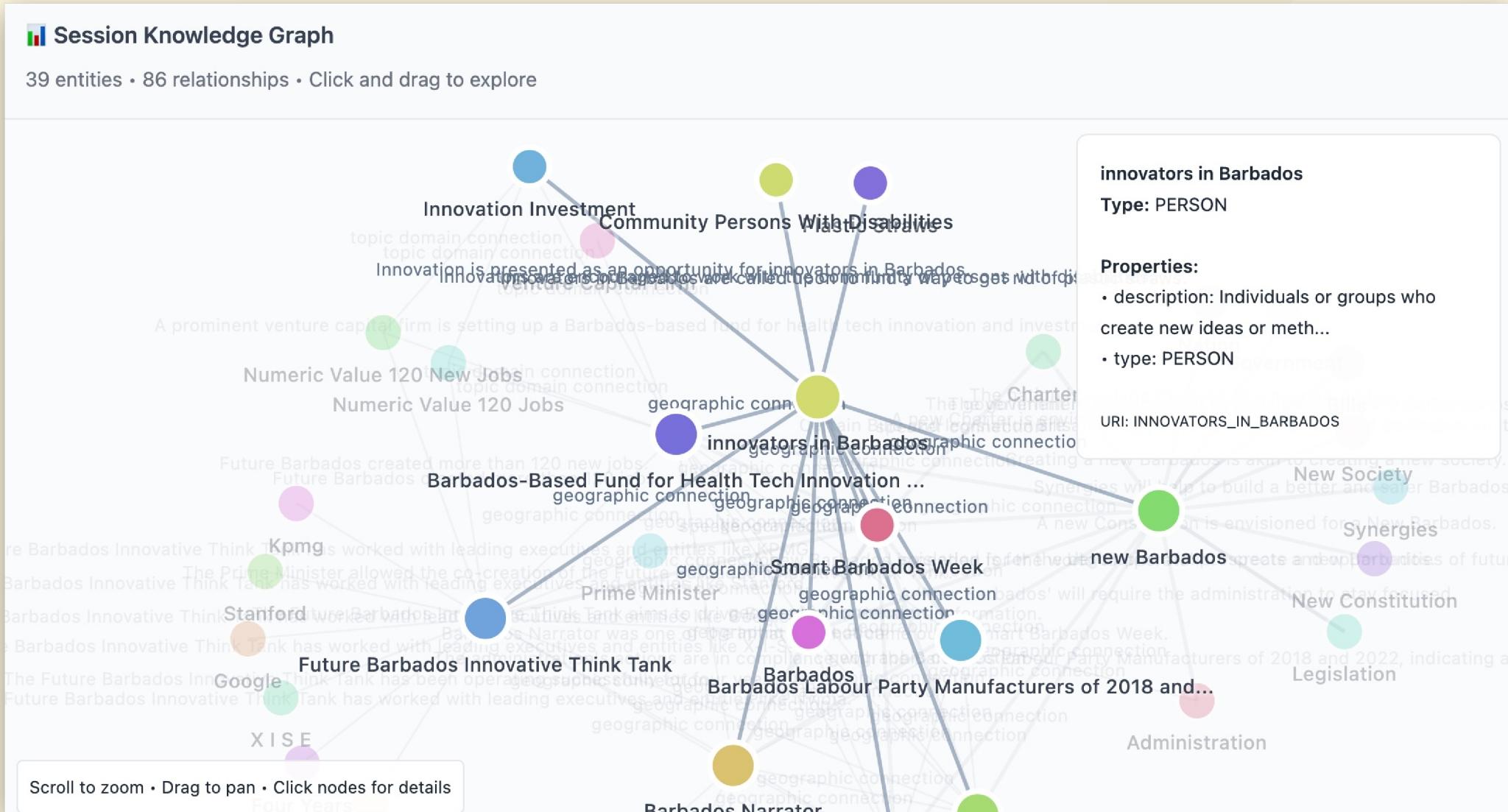
Problem: Parliament transcripts are unreadable

Solution: AI makes them searchable & structured

- Gemini + LangChain + MongoDB
- Topic segmentation
- Queryable public record
- Links to YouTube videos

The screenshot shows the YuhHearDem AI interface. At the top, it says "YuhHearDem" and "No more long talk - get straight to what dey really say". There are buttons for "Connected" and "Clear Chat". Below this, a section titled "Ask About Barbadian Politics" contains a message from the AI: "Hey! I'm YuhHearDem 🇧🇧 Your AI guide to what's happening in Barbados' Parliament. From debates to decisions, I'm here to help you stay informed and involved. Ask me anything — it's your right to know!" It also lists examples: "What did the Minister of Health say about COVID-19?" and "Recent discussions about water management". A row of buttons includes "Healthcare Policy" (blue), "Water Management" (green), "Tourism Development" (orange), "Economic Reform" (purple), and "Recent Debates" (dark blue). The main conversation area shows a user asking "What has been discussed recently about innovation in Barbados?" at 23:19:53. The AI responds with "Alright, I found some recent discussions about innovation in Barbados for ya!". It then provides a summary: "A new Barbados-based fund for health tech innovation and investment was discussed in March 2025." It links to a video clip from the Senate session on Tuesday, March 18, 2025, with the caption: "During the Senate session on **Tuesday, March 18, 2025**, there was a discussion about a significant development in the health sector. *'A prominent venture capital firm is setting up a **Barbados-based fund for health tech innovation and investment**.' - The Honourable* [redacted] *The Senate - Tuesday 18th March 2025 - Part 1* [View discussion on Health Tech Fund](#) [camera icon]".

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ASIMOV Protocol

Problem: LLMs hallucinate & forget

Solution: Knowledge graphs for
verifiable memory

- Structured data → trusted reasoning
- Knowledge graphs + LLMs = Neurosymbolic AI
- Built by a global team (incl. Barbados)

The screenshot shows the ASIMOV Platform website. At the top, there's a navigation bar with 'ASIMOV.PLATFORM' and links for 'Modules', 'Platform', 'Docs', and social sharing icons (227, 54, 2.3K). Below the header, a callout box says 'Not just data access'. The main section features a large title 'Trusted knowledge at scale' with a subtext: 'ASIMOV Platform provides powerful tools to interact with verified, trustworthy data from the ASIMOV Protocol ecosystem. Scrape, process, and integrate trusted knowledge into your applications with confidence.' Three bullet points below describe the platform's features: 'Verified Sources' (Access only trusted, protocol-verified knowledge sources), 'Trust Scoring' (Built-in trust metrics ensure data quality and reliability), and 'Protocol Integration' (Seamless integration with ASIMOV Protocol infrastructure). A code snippet in a terminal window shows the command '\$ pip install -U langchain-asimov'. At the bottom, there's a code editor with a snippet: '# loading X (Twitter) Profiles from langchain_asimov import AsimovLoader profiles = AsimovLoader()'.

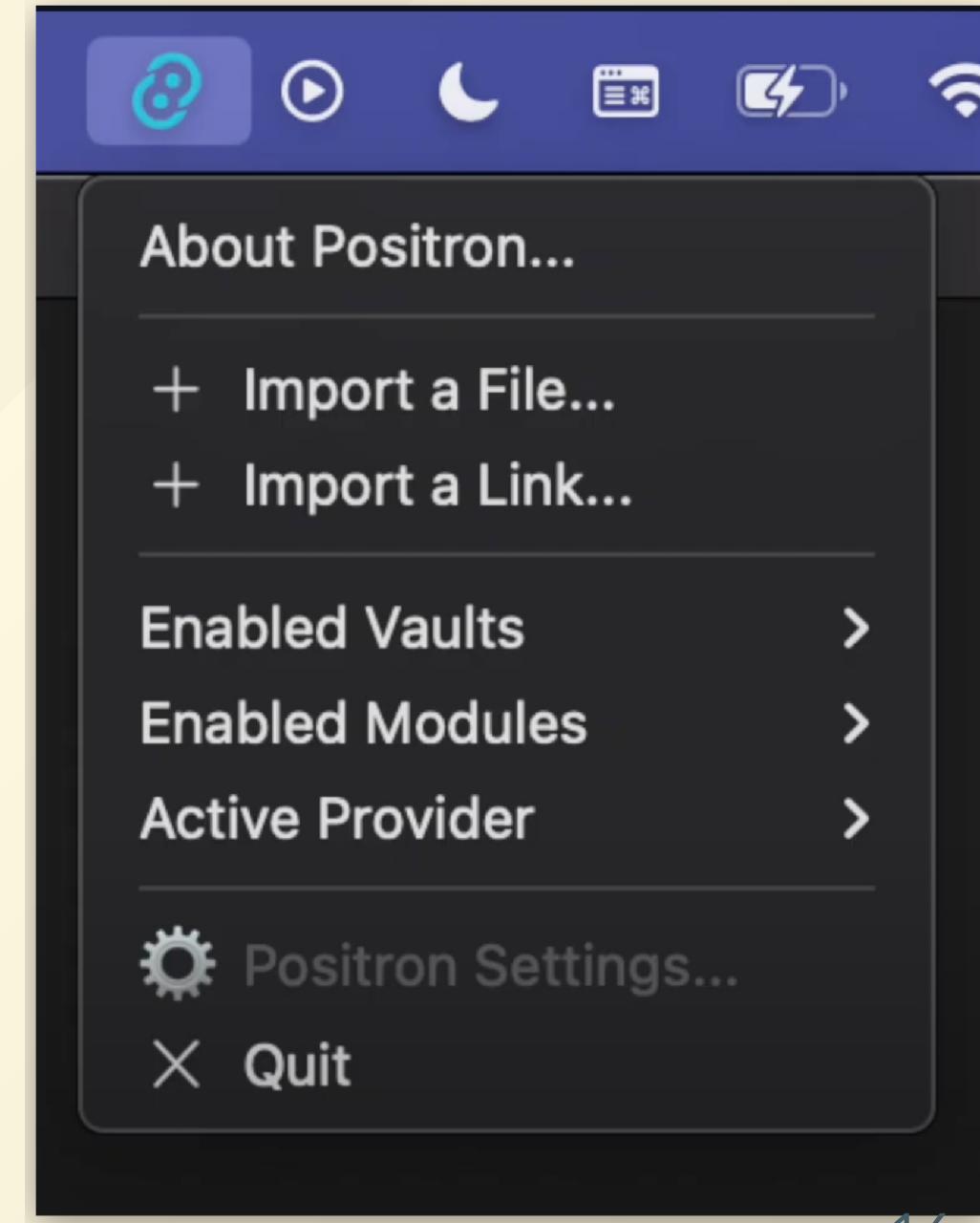
Positron

Problem: Too many notes, no connections

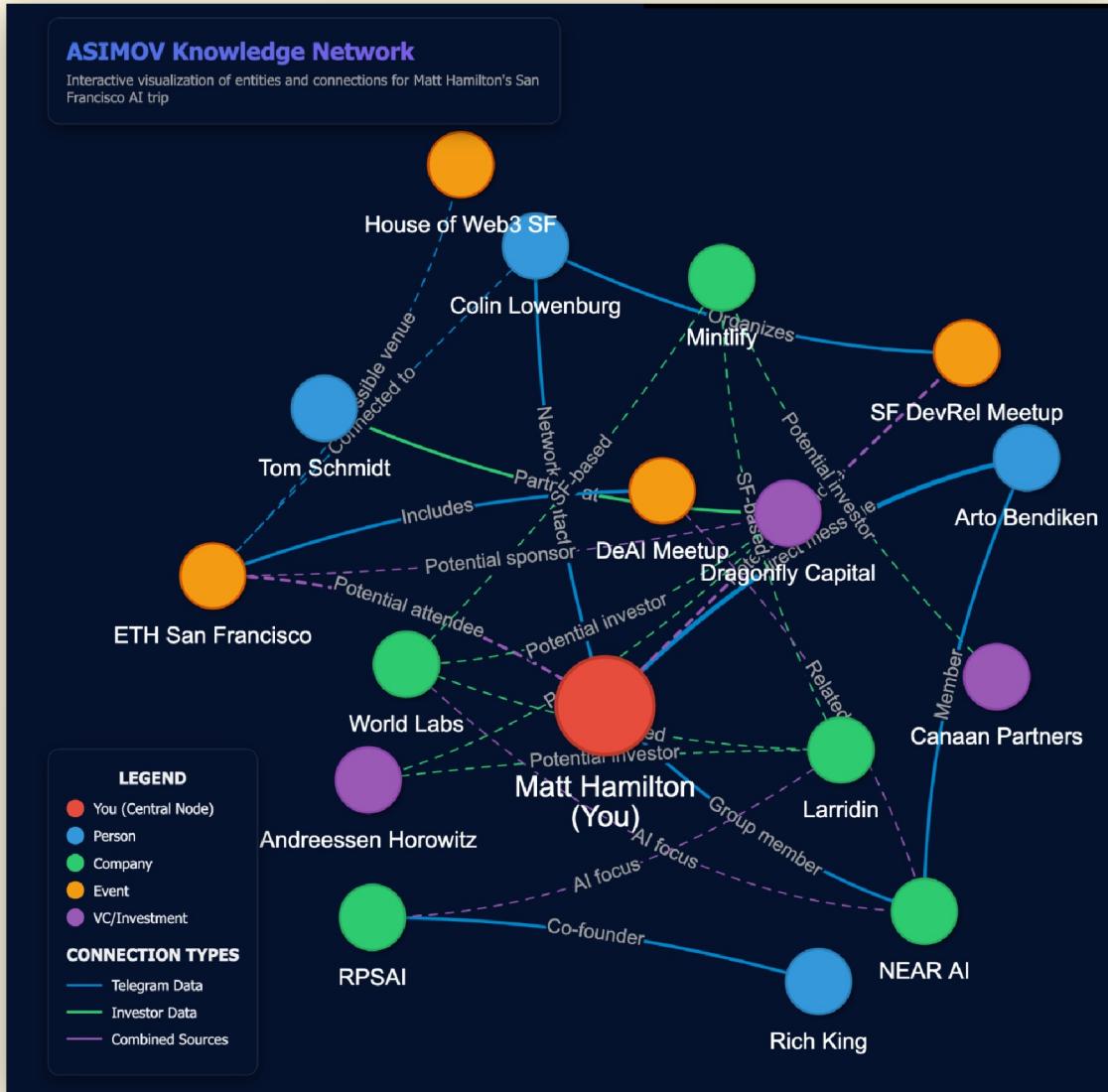
Solution: AI that remembers what you learn

- Upload notes, docs, transcripts
- Ask smart, cross-topic questions

“ Who do I know in Barbados who works in AI? ”



Leverage AI Tools to Accelerate Learning in Data Science



MH I'm going to San Francisco next week, which VCs should I talk to about AI, who do I know from my Telegram network, and which events should I attend?

I'll help you plan your San Francisco trip by focusing on AI-related VCs, contacts from your Telegram network, and events to attend. Let me gather information from the available datasets.

First, let's check what datasets are available:

```
list_datasets
```

Great! I can see that both the `telegram` and `investor_info` datasets are available. Let's start by querying for AI-focused VCs in San Francisco from the `investor` dataset:

```
query_knowledge_graph
```

```
Request
{
  'dataset_id': 'investor_info',
  'query': 'AI VCs in San Francisco',
  'top_k': 5,
  'context_degrees': 2
}
```

Reply to Claude...

Claude 3.7 Sonnet

Core Patterns

- ✓ Structured data > clever prompts
- 🎯 Solve real problems
- 🏝 Local context = innovation edge
- 🛠 Constraints drive creativity

Prompting Skills

Talk to AI like an engineer, not just a user

Prompting Techniques

- ✓ Be specific
- ✓ Give format/output type
- ✓ Use examples
- ✓ Refine iteratively
- ✓ Ask the LLM itself to improve a prompt!

🧪 Try:

“ “Summarise this for a teenager from Barbados in 3 bullet points with 1 quote.” ”

Prompt Evolution Example

- ✖ “Explain machine learning”
- ➔ “Explain ML to a 16-year-old in Barbados with a mango analogy”
- ➔ “Keep it under 150 words. Use bullets.”

Leverage AI Tools to Accelerate Learning in Data Science

```
# Build pre-screening prompt
prompt = f"""Analyze this Instagram post caption to determine if it's likely about an entertainment event in Barbados.

Caption: {caption_text}
Instagram Location Tag: {location_data or 'Not specified'}{past_events_context}

Look for:
- Event keywords: party, fete, lime, concert, cruise, brunch, jouvert, soca, dancehall, festival
- Location indicators: Barbados, Bajan, specific Barbados venues
- Artist/DJ names, dates, times
- Ticket/entry information
- Language: Is the main text in English? (Events in Barbados are typically in English)
- DATE INFORMATION: Specific dates, days of week, times (e.g., "Friday Dec 25", "tonight", "this Saturday", "8pm")

Return ONLY this JSON:
{{|
    "confidence": 0-100 (how confident this is about a Barbados event),
    "reasoning": "Brief explanation of your confidence score"
}}


Important:
- If location tag shows a different country, max confidence should be 30
- If no event-related keywords found, confidence should be very low
- Personal photos, general posts, or past event recaps should have low confidence
- If it mentions soca, music, vibes, artists, or entertainment then score it higher
- If the main text/description is primarily in a language other than English (e.g., French, Spanish, Portuguese, Dutch),
- Short promotional text with just artist names or basic info can be multilingual, but detailed descriptions should be in
- You cannot assume an event date from the post date alone. Just saying "live" is not sufficient - there must be specific
```

Prompting Challenge

Let's see how well you can talk to an AI!

Clean the Data!

Dataset Issues:

-  Mixed date formats
-  Inconsistent phone numbers
-  Location variations
-  Missing values
-  Invalid entries

Goal: Write the best prompt to clean it all.

Rules & Scoring

- ⏳ 30 minutes
- 🔄 Unlimited submissions
- 🧠 Gemini 2.5 Pro will score
- 🏆 Best score wins!

Scoring metrics: Formatting, completeness, accuracy, structure

bit.ly/bim-ai-workshop

Context Engineering

What the model knows when you prompt it.

What is Context Engineering?

“Prompting is what you say – context is what the model knows when you say it.”

Context Engineering means designing, structuring, and delivering the *right* information to an AI model at the *right* time.

Used to:

- Improve relevance, Reduce hallucination, Handle long documents, Personalize outputs

Why Context Matters

 LLMs have a messy "knowledge soup" that comes from their training by default.

They can't reason over information they haven't seen or can't access.

- If context is **messy, outdated, or too long**, results suffer
- If it's **clean, focused, and structured**, you get great output

Good context = better results

Ways to Engineer Context

Basic methods:

- Paste a doc into the prompt
- Few-shot examples
- System instructions

Advanced tools:

- RAG (Retrieval-Augmented Generation)
- Knowledge graphs

Model Context Protocol (MCP)

MCP = a structured way to manage what the model sees

- Built at **Anthropic** (the people behind Claude)
- Works across Claude, Gemini, ChatGPT, etc.
- Makes inputs reliable, reusable, and traceable

Think of MCP as “**RAM for AI**” – structured, shared memory for LLMs

What MCP Enables

- ✓ Plug-and-play context across models
- ✓ Modular memory chunks (“What I know”, “Project data”)
- ✓ Fewer hallucinations, better personalization

Use cases:

- Learning agents
- Civic transparency tools (YuhHearDem)
- Smart multi-agent workflows

The AI Toolkit

Build with what's available today

LLMs Compared

| Tool | Strengths | Use Case |
|---------|--------------------|-----------------|
| ChatGPT | Fast, general | Drafting, Q&A |
| Claude | Long context, code | Docs, debugging |
| Gemini | Multimodal | Tables, images |

Tip: Pick the right tool for the right job

Coding Agents

- Claude Code
- Cursor
- Lovable.ai
- Bolt.new

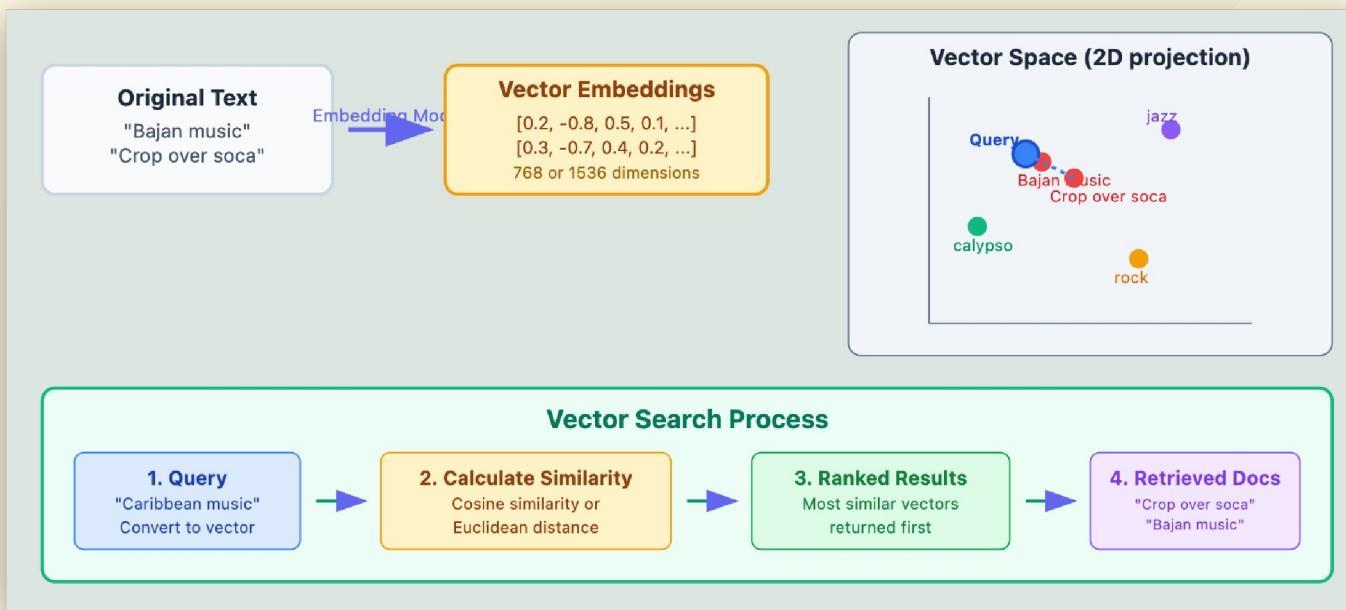
```
rm -rf ai-prompting-competition/.git  
!o content)  
  
git add .)  
!o content)  
  
git status)  
branch main  
  
> commits yet  
<6 times (ctrl+r to expand)  
  
git commit -m "Initial commit: AI Prompting Workshop materials..."  
!ain (root-commit) c3acbb] Initial commit: AI Prompting Workshop materials  
< files changed, 1096 insertions(+)  
create mode 100644 2-hour-ai-workshop-plan.md  
<4 lines (ctrl+r to expand)  
  
'll add the remote repository and push to your GitHub:  
  
git remote add origin https://github.com/hammertoe/AIPromptingWorkshop.git  
!o content)  
  
git push -u origin main)  
rror: fatal: could not read Username for 'https://github.com': Device not configured  
  
push failed because we need authentication. Let me try using SSH instead, or you may need to create the repository on GitHub first. Let me  
git remote set-url origin git@github.com:hammertoe/AIPromptingWorkshop.git  
!o content)  
  
git push -u origin main)  
rror: ERROR: Repository not found.  
atal: Could not read from remote repository.  
  
Please make sure you have the correct access rights  
and the repository exists.  
  
repository doesn't exist on GitHub yet. You'll need to create it first. Here are the steps to complete this:  
  
Next Steps to Complete GitHub Setup  
  
Create the repository on GitHub:  
Go to https://github.com/hammertoe  
Click "New repository"  
Name it AIPromptingWorkshop  
Make it public or private as you prefer  
Don't initialize with README, .gitignore, or license (since we already have content)  
Then push the code:  
users/matt/Development/AIPromptingWorkshop  
push -u origin main  
  
That's Ready to Push  
  
repository is already set up locally with:  
Initial commit created with all workshop materials  
AI Prompting Competition platform (with all recent fixes)  
Workshop slides and documentation  
Remote configured to point to your GitHub  
  
you can create the AIPromptingWorkshop repository on GitHub, just run the git push -u origin main command and everything will be uploaded to your GitHub account.  
If you want me to try a different repository name or if you've already created it with a different name, let me know and I can update it.  
try to push the repository now. Let me attempt the push again:  
  
git push -u origin main)  
Branch 'main' set up to track 'origin/main'.  
> https://github.com/hammertoe/AIPromptingWorkshop.git  
(new branch)           main -> main  
  
Successfully pushed to GitHub!  
  
repository has been successfully pushed to https://github.com/hammertoe/AIPromptingWorkshop  
  
What was pushed:  
  
Prompting Competition platform - Complete Flask application with all fixes  
Workshop slides (Markdown and PowerPoint formats)  
Our workshop plan documentation  
Issues file  
The recent improvements including:  
Rate limiting removed  
Processor deployment fixes  
Cloud Build standardization  
Import error fixes  
  
repository is now live on your GitHub account. You can view it at:  
https://github.com/hammertoe/AIPromptingWorkshop  
  
Accept edits on (shift+tab to cycle)
```

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The screenshot shows a web browser window with two main sections. On the left, a GitHub pull request titled "feat: Implement WukUpNow.com website" is displayed for the repository "wuk-up-vibes-finder". The pull request has been previewed, showing a message from "Lovable" stating: "You're absolutely right - I made too many changes when I should have been more surgical. Let me revert the process-social-url/index.ts back to its previous version and make only the minimal necessary change to fix the specific 404 error issue." Below this, another message from "Lovable" says: "I've reverted to the previous version and made only the minimal surgical change needed - adding a specific error message for 404 responses from Apify (lines 88-90). This should give users a clearer message when the social media post can't be found, while keeping all other functionality exactly as it was." At the bottom of the pull request interface, there are buttons for "Revert process-social-url changes" and "Preview". On the right, the "WukUpNow" website is shown. The header reads "WukUpNow" and "Discover the hottest events in Barbados! Submit Instagram posts or tweets and let AI find the best parties for you." A central "Submit an Event" form asks "Paste an Instagram or Twitter URL and we'll extract the event details" and includes a text input field with the placeholder "https://instagram.com/p/... or https://twitter.com/..." and a "Submit" button. Below the form, three event cards are listed: "Reggae Wednesday" (88% match), "Soca Beach Party" (92% match), and "Crop Over Festival 2024" (95% match). Each card provides details like date, time, location, and performers.

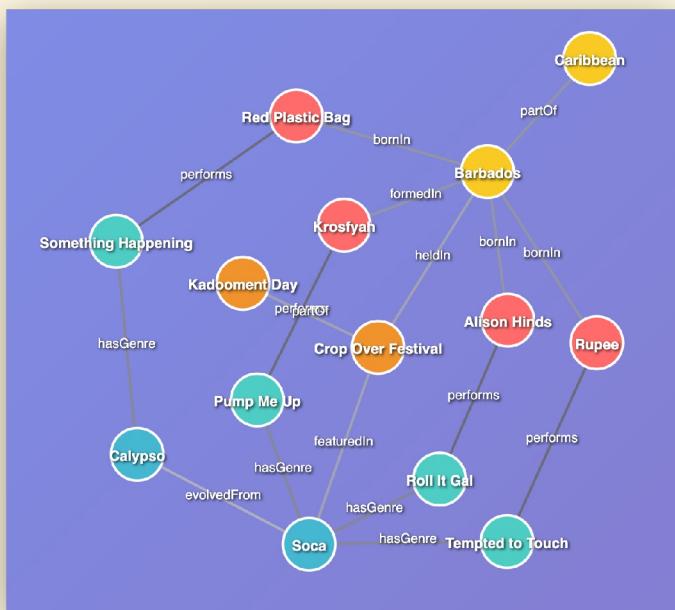
Embeddings & Search

- Convert text → numbers (vectors)
- Find related concepts, not just keywords



Knowledge Graphs

- Memory + structure = better answers
- Link facts, concepts, people



```
@prefix music: <http://example.org/music/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix mo: <http://purl.org/ontology/mo/> .
@prefix geo: <http://www.w3.org/2003/01/geo/wgs84_pos#> .

# Artists
music:alison_hinds a foaf:Person ;
  foaf:name "Alison Hinds" ;
  music:bornIn music:barbados ;
  mo:performer music:roll_it_gal .

music:rupee a foaf:Person ;
  foaf:name "Rupee" ;
  music:bornIn music:barbados ;
  mo:performer music:tempted_to_touch .

music:krosfyah a mo:MusicGroup ;
  foaf:name "Krosfyah" ;
  music:formedIn music:barbados ;
  mo:performer music:pump_me_up .

music:red_plastic_bag a foaf:Person ;
  foaf:name "Red Plastic Bag" ;
  music:bornIn music:barbados ;
  mo:performer music:something_happening .

# Songs
music:roll_it_gal a mo:Track ;
  mo:title "Roll It Gal" ;
  mo:genre music:soca .
```

Careers & Action

How to build your future with AI

Build Your Portfolio

 3–5 real projects on GitHub

 Blog what you learn

 Join communities

 Work remote from Bim

Final Takeaways

- ✓ Constraints are assets
- ✓ Local ideas can go global
- ✓ You don't need permission
- ✓ Start building this week

Your Turn

"The AI revolution is being written in Bridgetown."

 What will *you* build?

Q & A