



AI TOOLS WORKSHOP

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Agenda

- AI Buzz: What is AI and Why now?
- Brief introduction to Large Language Models
- Improving your ChatGPT usage
- Other AI tools to level up your work
- Q&A

AI Buzz

- AI is about teaching computers to do things that normally require humans



ChatGPT



YouTube

NETFLIX

- Sudden explosion caused by:
 - *Big Data*
 - *Powerful Computing*
 - *Smarter Algorithms*

AI Buzz

- AI is about teaching computers to do things that normally require humans



ChatGPT



YouTube

NETFLIX

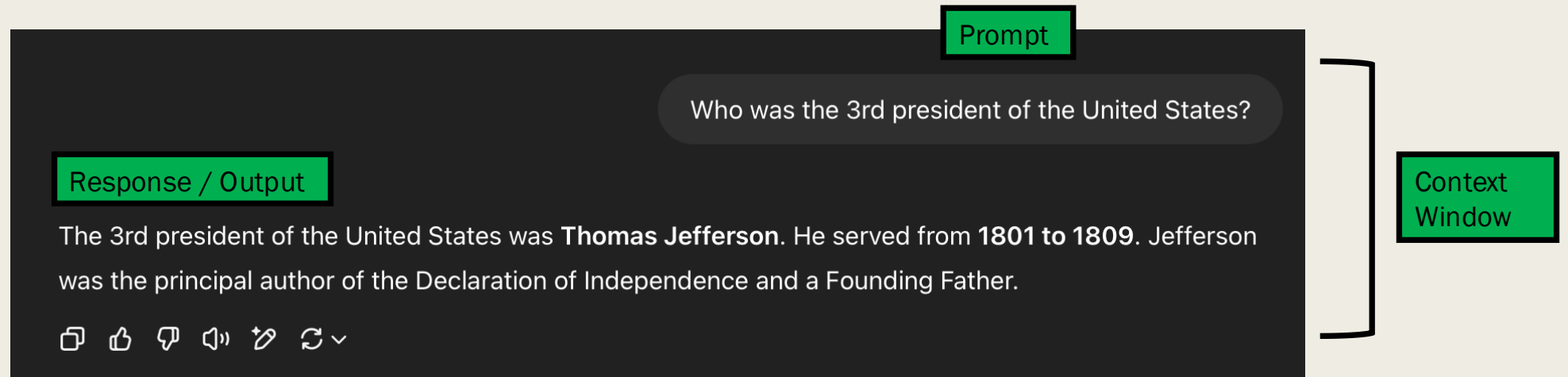
- Sudden explosion caused by:
 - *Big Data*
 - *Powerful Computing*
 - *Smarter Algorithms*

Other categories we won't cover today:

- Drug discovery (AlphaFold)
- Fraud detection (Supervised Machine Learning)
- Algorithmic Trading (Reinforcement Learning)
- Supply chain optimization (Optimization)
- Object Detection (Computer Vision)
- Personalized Recommendation (Recommendation Engines)

Large Language Models

- Large Language Models (like ChatGPT) understand and generate human-like text
- Prompts are the instructions/questions you provide to ChatGPT



Higher quality prompts lead to higher quality responses / output

Prompting Strategies to Enhance ChatGPT

1. Be Clear, Be Specific
2. Use Instructions and Define the Task
3. Use Role-Based Prompting
4. Show, Don't Just Tell
5. Explain Your Reasoning
6. Iterate and Refine
7. Make the LLM Ask You Questions
8. Specify Your Desired Output



Tip 1: Be Clear, Be Specific

- LLMs use available context to predict the best response to your prompt.
- Clearer and specific prompts will generate higher-quality outputs

Original Prompt:

“Write about Project Management”

Improved Prompt:

"Explain the key benefits of Agile project management for a software development team new to the methodology. List 3-5 main advantages."

Tip 2: Use Instructions and Define the Task

- Use strong action verbs when prompting LLMs (e.g., Write, Summarize, Explain, etc.)
- Break down complex requests into smaller, instructed steps
- Specify constraints for the task

Original Prompt:

“Can you give me some marketing ideas”

Improved Prompt:

"Generate 5 creative marketing slogans for a new eco-friendly coffee cup. Each slogan should be under 10 words and highlight its reusable nature. Exclude any mention of price."

Tip 3: Use Role-Based Prompting to Shape Outputs

- By telling an LLM to “act as a <insert persona>”, the output will match the tone and style of that persona.
- A few specific examples are “act as a teacher”, “act as a critical reviewer”, “act as a job interviewer”

Original Prompt:

“Explain the concept of blockchain”

Improved Prompt:

”Act as a financial advisor for beginners. Explain the concept of blockchain in simple terms, highlighting its potential relevance to personal investing”

Tip 4: Show, Don't Just Tell: Few-Shot Prompting

- Terminology:
 - *Zero-Shot: Don't provide any examples (all prompts we've done so far)*
 - *Few-Shot: Provide LLM examples of expected output*
- Providing examples of how you want the LLM to respond is highly effective in shaping the output
- Most useful for specific requests, ensuring LLM follows custom output formats, and tone replication

Tip 4: Example

Original Prompt:

“Summarize the key sentiment of this review. ‘The product arrived on time as described’.”

Improved Prompt:

“Summarize the key sentiment of the following customer reviews. Sentiment should be Positive, Negative, or Neutral.

Review: 'The new software update is fantastic and so easy to use!' Sentiment: Positive

Review: 'I'm really disappointed with the battery life on this device.' Sentiment: Negative

Review: 'The product arrived on time as described.' Sentiment: ”

Tip 5: Explain Your Reasoning

- Asking the LLM to “think step by step” can lead to more accurate and logical answers, especially for prompts that require multiple steps to get to the expected output.
- Note: Most LLMs are trained to do this because it is so effective.

Original Prompt:

“If a train leaves Chicago at 3 PM traveling at 60 mph, and another train leaves Chicago at 4 PM traveling at 70 mph in the same direction, at what time will the second train catch up to the first?”

Improved Prompt:

“If a train leaves Chicago at 3 PM traveling at 60 mph, and another train leaves Chicago at 4 PM traveling at 70 mph in the same direction, at what time will the second train catch up to the first?”. Explain your reasoning step by step

Tip 6: Iterate and Refine

- After the first prompt and response, you can shape the LLMs future answers by providing specific guidance
 - *“Can you make that more concise”, “Rewrite that in a more formal tone”*
 - *“Act as a critic and point out weaknesses in your previous response”*

Write a short poem in the style of William Shakespeare about the joy of owning dogs. Keep the poem to less than 100 words. The tone should be positive.

Upon a morn with golden sun aglow,
Mine hounds do leap where gentle breezes blow.
With eyes so bright and tails a-whirlèd fast,
They chase the winds as if to outpace past.

No richer joy hath man, nor kinder friend,
Than canine hearts that love without an end.
Their faithful gaze, their mirth in every paw—
A balm to souls, more pure than written law.

So let them run, and let mine spirit rise,
For dogs bring heaven nearer to our skies.

Now rewrite the poem as a Pirate

Arr, when dawn doth break with golden gleam,
Me trusty dogs be like a wild sea's dream.
With eyes ablaze and tails a-swirlin' free,
They chase the winds like waves upon the sea.

No richer joy on this here ocean wide,
Than mates who stand forever by yer side.
Their loyal hearts and barkin' bold and true—
A treasure more than gold or rum'll do.

So hoist the sails, let spirits sail and soar,
With dogs aboard, we ne'er be lonely o'er!

Tip 7: Make the LLM ask you Questions

- For complex prompts, ask the LLM to provide you a list of questions to answer before completing the task
- This helps provide more specific, clear context to the LLM

I want you to write a haiku in the form of William Shakespeare.
Before writing the haiku, please ask me any questions to help refine my objective for the haiku. Once you are confident in my objective, then generate the haiku

Of course! To craft a Shakespearean-style haiku that best fits your desire, may I ask:

1. What theme or subject would you like the haiku to explore? (e.g., love, nature, time, joy)
2. Should the tone be more serious, romantic, contemplative, or lighthearted?
3. Do you want the haiku to incorporate any specific imagery or symbols?
4. Would you prefer it to reflect more of Shakespeare's language style (archaic words, rhythm) or just his overall mood and tone?

Once I have this, I'll compose a haiku that truly fits your vision!

Make the theme about love
The tone should be romantic
Make sure to use butterflies in the haiku
I would like to match the overall mood and tone of Shakespeare, but not the language style. Use modern words

Great! Thanks for the details. So, just to confirm:

- Theme: Love
- Tone: Romantic
- Imagery: Butterflies
- Style: Shakespeare's mood and tone—deep, thoughtful, heartfelt—but with modern language

With that in mind, here's your Shakespeare-inspired romantic haiku about love and butterflies:

Love's gentle whisper—
butterflies dance in my chest,
hearts take flight as one.

Tip 8: Specify your Desired Output

- Be explicit in what you want the LLM to generate
 - *“Generate a 50 word summary” vs. “Generate a 2 page report”*
 - *“Use a formal tone” vs. “Use a humorous tone”*

Using a formal tone, provide a summary of blockchain in 25 words or less

Blockchain is a decentralized, tamper-resistant digital ledger that securely records transactions across distributed systems, ensuring transparency, immutability, and trust without requiring centralized authority.

Using a humorous tone, provide a summary of blockchain in 50 words or less

Blockchain is like a digital notebook passed around a classroom where no one trusts each other—but everyone double-checks every scribble. It's tamper-proof, endlessly verified, and nobody can erase anything. Great for cryptocurrency, less great if you regret that one transaction that bought 10,000 pizzas for a few bitcoins back in 2010.

AI Tools Buffet

- Large Language Models for General Use
- Deep Research
- Automatic Notetaking
- Presentation Generation
- Image Generation
- Video Generation
- Code Generation
- Automation
- Proposal Generation

LLMs for General Use (Free Tier)

OpenAI ChatGPT



What can I help with?

Ask anything



Tools



Create an image

Search the web

Write or code

Run deep research 5 left

Think for longer

Google Gemini



Tell me what
you can do

Research
a topic

Give me
study tips

Save me
time

Ask Gemini



Deep Research

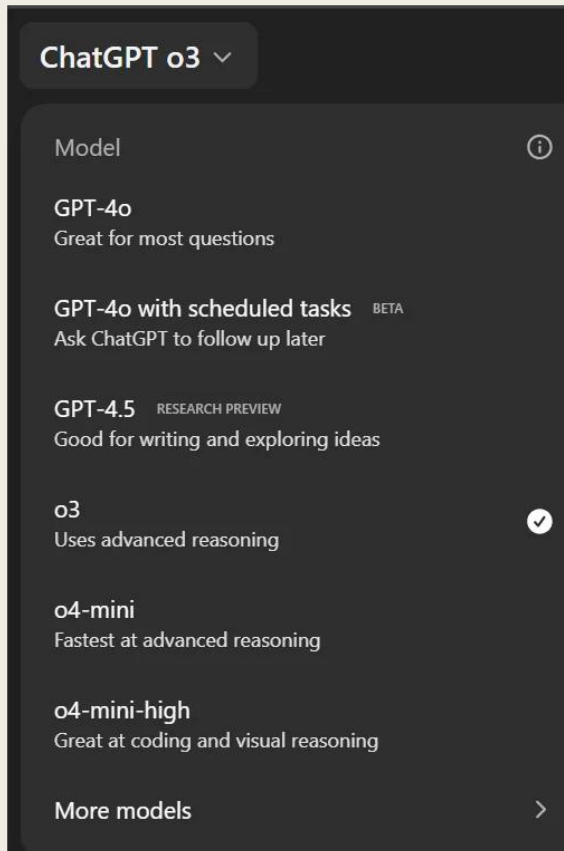


Canvas



For both platforms, on the free tier you get access to image generation, web searches, deep research, and general conversation. However, both have rate limits and use a weaker model.

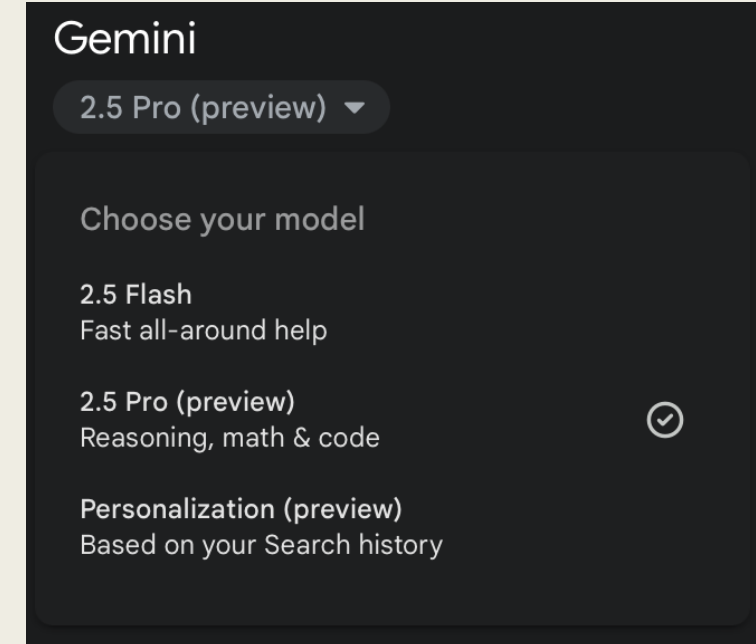
LLMs for General Use (Paid Tier)



OpenAI ChatGPT



Google Gemini



For both platforms, the paid version is \$20/month. Highly recommended if you use ChatGPT daily. The improved models are much better than the free tier models

Deep Research

- Deep Research is best for complex tasks where you would normally Google multiple times before getting an answer (e.g., planning a trip, doing market analysis, learning about a new customer)
- Prompt: "I'm planning to meet with the leadership team of Leadership Greater Huntsville. I don't know much about their organization. Can you identify the leadership team, major initiatives, and programs that Leadership Greater Huntsville runs? What is their mission and vision for the Huntsville community?"
 - *Example without Deep Research:* <https://chatgpt.com/share/683f1176-bae8-8011-9acc-48a2063a5343>
 - *Example with Deep Research:* <https://chatgpt.com/share/683f1143-b634-8011-b63e-e961dcb3c1a8>
 - *Example with Gemini Deep Research:* <https://g.co/gemini/share/2422229f46e5>

Automated Notetaking

- Application joins your Zoom, Google Meet, Teams call to capture notes
- Tools provide meeting transcripts, summaries, action items, and attendee lists
- Some examples:
 - *Otter AI (Free and Paid Versions)*
 - *Fireflies AI (Free and Paid Versions)*

The image shows a user interface for a meeting summarization tool. The top section, titled "Product Launch Prep Meeting", features a profile for Madison Evans and metadata: "Nov 16 10:00AM - 11:05AM", "1:08:47", and "24 Screenshots". Below this are tabs for "Summary" and "Transcript". The "Summary" tab displays a paragraph: "The team of Charlie (product), Madison (marketing), and Brian (design) is excited for their software launch in 6 weeks. Key topics discussed include finalizing pricing, planning a launch party, and weekly check-ins for smooth execution. The conversation ends with high spirits and confidence for a successful launch."

The bottom section shows a detailed view of a "Kickoff Call – Fireflies.ai x Acme" meeting. It includes a "Notes" tab with an "Overview" section stating the call's purpose and a "Notes" section with a "Use Case & Requirements" list. The "Transcript" tab on the right shows a list of speakers (Sarah, Janice, Chris) with their respective timestamps and the text of their contributions.

Product Launch Prep Meeting

Madison Evans

Nov 16 10:00AM - 11:05AM | 1:08:47 | 24 Screenshots

Summary | Transcript

The team of Charlie (product), Madison (marketing), and Brian (design) is excited for their software launch in 6 weeks. Key topics discussed include finalizing pricing, planning a launch party, and weekly check-ins for smooth execution. The conversation ends with high spirits and confidence for a successful launch.

Notes | Video

Kickoff Call – Fireflies.ai x Acme

Sarah Watts, +3 | Mar 15 - 11:30 AM

Sales Notes | Customize | + AI Apps

Overview

The kickoff call served as an introduction between Fireflies.ai and Acme Inc. They aim to use Fireflies.ai primarily to streamline internal communications, automate sales call follow-ups, and improve meeting workflows.

Notes

Use Case & Requirements: 00:00 - 10:12

- Acme wants their sales team more present during calls
- They want to automate data entry in HubSpot CRM
- Team managers want to use Fireflies to provide call coaching

Metrics & Goals: 10:15 - 20:43

- Acme is looking to buy Fireflies for 50 seats

Transcript

Search

Sarah · 00:53

We're aiming for a seamless onboarding experience, especially around the integrations with Slack and HubSpot.

Janice · 01:24

Absolutely, our team will work closely with your tech lead to ensure a smooth integration process.

Chris · 01:47

I'll prepare the technical requirements and reach out to your team ahead of the setup meeting next Tuesday.

Sarah · 02:19

I'll coordinate with your team for the first training session

Presentation Generation

- Customized, fully generated AI presentations
- Example tools
 - *Beautiful.ai*
 - *Gamma.app*

Video available here about halfway down the page:

<https://www.beautiful.ai/presentation-maker>

Image Generation

- Included with ChatGPT and Gemini. For more features use Midjourney
- Use same prompt strategies for image generation



Generate an image of a Great Pyrenees laying in the woods. There is a red ball by the dog. It is slightly overcast. The image should be hyperrealistic.



Generate an image of a Great Pyrenees laying in the woods. There is a red ball by the dog. It is slightly overcast. The image should be in an animated cartoon style.

Video Generation

- Included with ChatGPT and Gemini Paid Tiers. Some other options, but varied results

AI-Generated video with Google Veo3

<https://x.com/nmatares/status/1924931844879134804>

Code Generation

- LLMs are very, very good at coding.
 - *Gemini and Claude are the best*
- Tools for Code Generation
 - *Github Copilot (\$10/month)*
 - *Cursor (\$20/month)*
- As project size grows, LLMs will struggle more because there is so much information to keep in context
- More specific tools:
 - *Website Development: Lovable.dev, Bolt*
 - *Initial MVP development: Replit, v0*

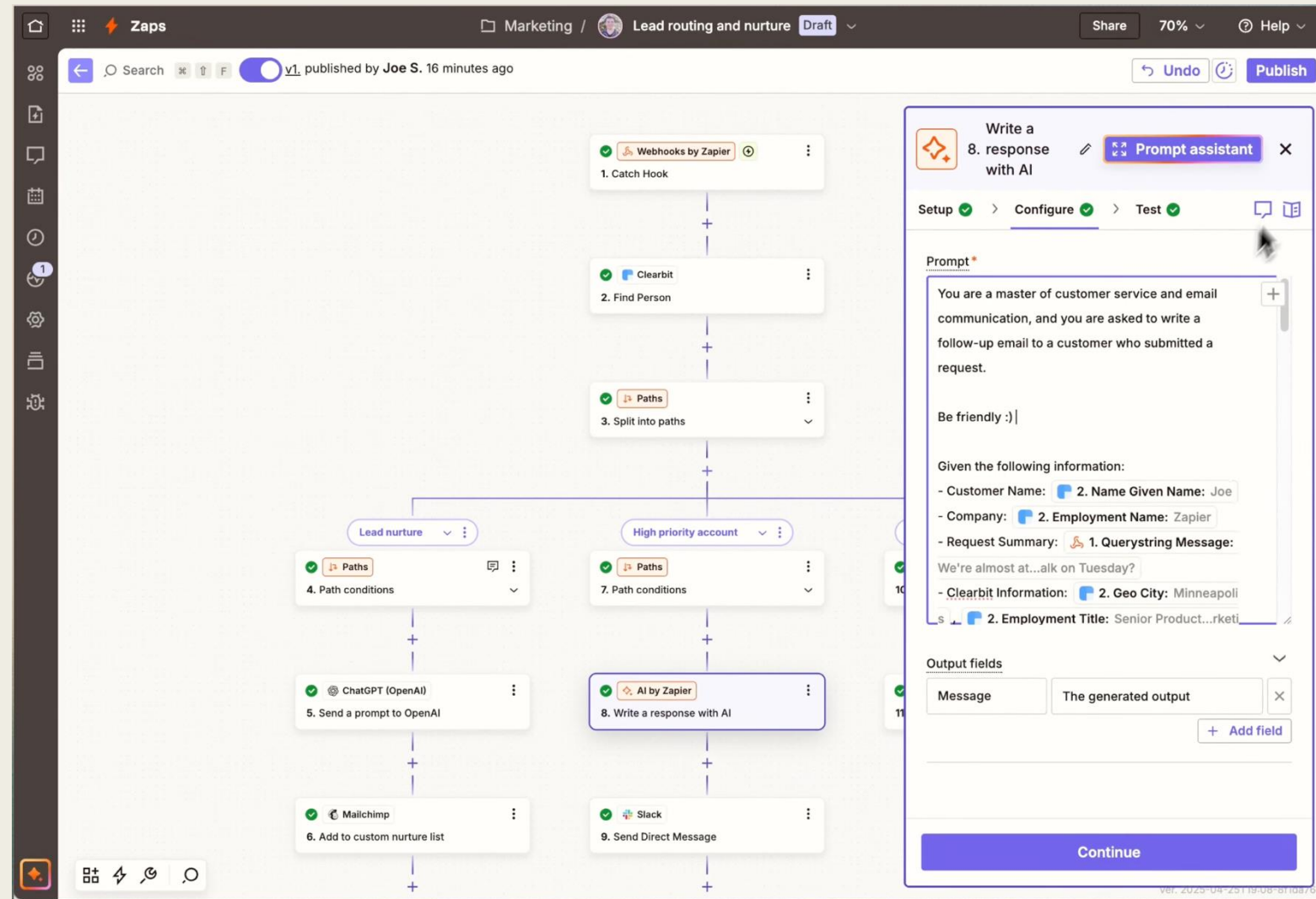
Prompt: Write a Python script to play the game snake. Make sure that the snake is green and that the food is an apple. Use the arrow keys to control the snake

<https://g.co/gemini/share/5e9dfdd96108>

Video of Python code running successfully

Automation Workflows

- Traditional workflows, enhanced by AI (such as ChatGPT)
- Generally, lots of customization and low technical bar
- Tools
 - *Zapier*
 - *n8n*
 - *Microsoft PowerAutomate*



Proposal Generation

- Lots of tools for proposal generation (DoD-focused and general proposals)

- Tools

- *GovDash*
- *UseRogue*
- *Sweetspot*

The screenshot displays the UseRogue AI interface for generating a proposal. The main window is titled "ROGUE" and features a rich text editor with a toolbar. On the left, a sidebar lists the document structure: "Auto3d SBIR Technica...", "Introduction", "Technical Approach", "3D Orthomosaic Generation", "Edge Computing", "DDIL Environment", "Handheld Drones", "Project Plan", "Phase 1", "Phase 2", "Capabilities and Experience", and "Conclusion". The "Technical Approach" section is currently selected and highlighted in blue. The main text area shows a paragraph about Trenchant Analytics' SBIR Phase II proposal for the development of auto3d, an advanced 3D orthomosaic generation system. Below this, a "TECHNICAL APPROACH" section is visible, with a sub-section titled "The auto3d system will leverage advanced computer vision and photogrammetry algorithms to stitch together aerial imagery captured by handheld drones, creating seamless, georeferenced, and highly accurate 3D orthomosaics in near-real time. Our approach will include:". This text is highlighted in blue. To the right of the main text area, there is a "Suggestions" panel and a "Rogue Chat" panel. The "Rogue Chat" panel shows a chat history with a message: "accurate 3D orthomosaics in near-real time. Our approach will include:". Below the chat history, there is a "Deep Dive" section with a "Prompts" button and a "Clear" button. At the bottom, there is a "Current document" section with a "Type here..." input field.

Other General Tools

- AI-Powered Email Management
 - *Gmail's Smart Reply, Copilot for Outlook*
- AI Writing Assistants
 - *Grammarly, Wordtune*
- Task / Project Management Tools
 - *Asana, Notion AI*
- Data Analytics and Business Intelligence
 - *Copilot in Excel, Google Sheets "Explore"*
- Scheduling Assistants
- AI in Customer Relation Management Tools
- Speech to Text Generation
 - *ElevenLabs*
- Podcast Generation
 - *NotebookLM*

Questions?

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