



# Free AI Projects

Use or Retrain As Needed!

The Black Hole (1979) Disney

Elysium (2013) Neil Blomkamp

# Places to Look For Code

- **Github is Top Source for Software**
  - Freelance Model+Layer Configuration Code
    - **YouTube** for Training Vids and Advanced Research
- **HuggingFace Model Repository:**
  - Models & Datasets With Standardized Support Code
- **Corporates and UAE:**
  - Stability AI, Meta, OpenAI and Abu Dhabi
    - Massive Models of All Types Open for Use

# Common Applications

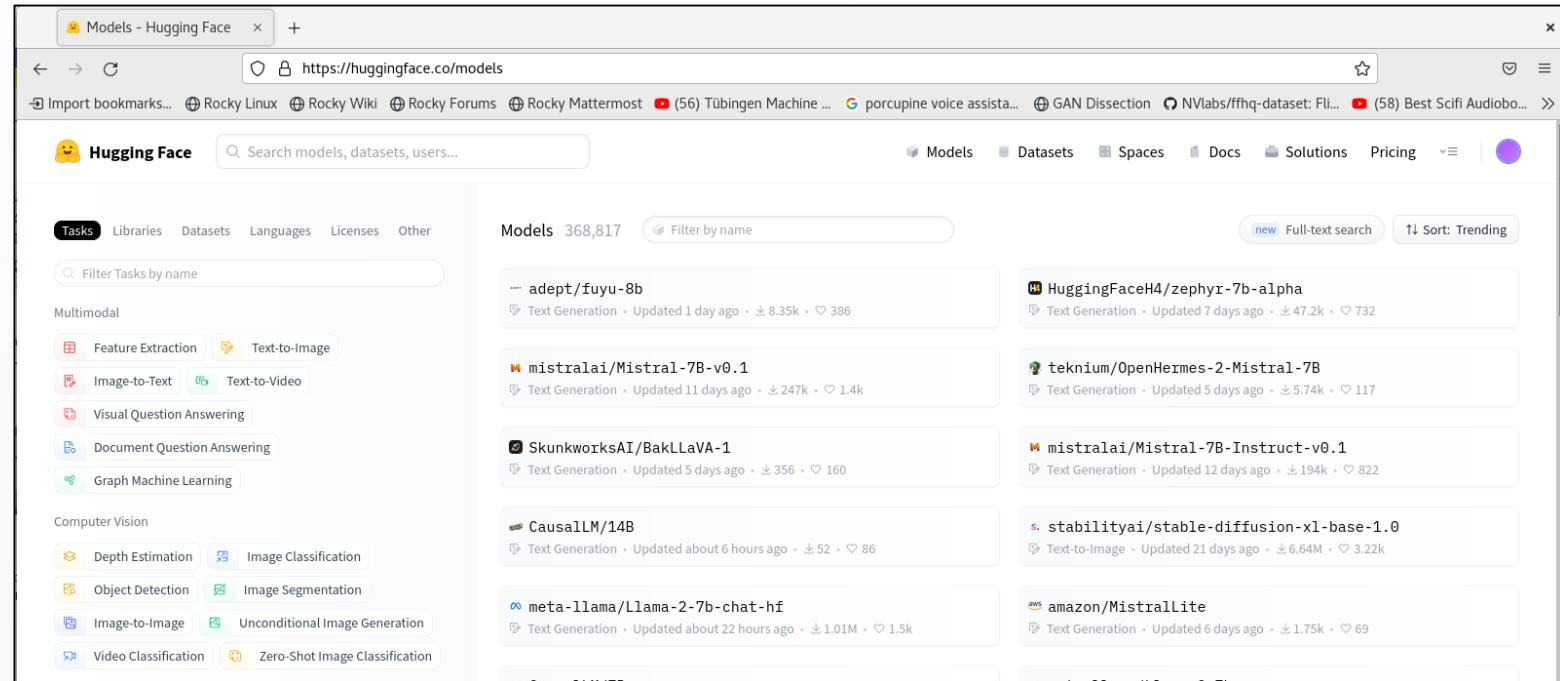
- **Copilot, CodeLlama, Solutions Architect:**
  - Text-to-Code Models For Rapid SW Development
- **Stable Diffusion, Midjourney, DALI-3:**
  - Text-to-Image or Text-to-Video
- **Image Filters, Face Aging, Shoulder Celeb's:**
  - Live Face Mods, Body Aging, Background People Mods

# Model Repository Site

- **HuggingFace**

- Repository for Free Models
- Open License or Minimal Restrictions
- Use **git lfs clone** Because Models Can Be GB's

- Most Models  
Re-trainable To  
Meet Your Own  
Personal Needs.



The screenshot shows the Hugging Face Model Repository homepage. The URL in the browser is https://huggingface.co/models. The page features a search bar at the top right and a navigation bar with links for Models, Datasets, Spaces, Docs, Solutions, and Pricing. On the left, there's a sidebar with sections for Tasks (Multimodal, Computer Vision), Libraries, Languages, Licenses, and Other. The main content area displays a grid of model cards. Each card includes the model name, its purpose (e.g., Text Generation, Image-to-Image), last update time, size, and the number of stars. Some models shown include adept/fuyu-8b, HuggingFaceH4/zephyr-7b-alpha, mistralai/Mistral-7B-v0.1, SkunkworksAI/BakLlaVA-1, CausallM/14B, meta-llama/Llama-2-7b-chat-hf, and amazon/MistralLite. The interface is clean and modern, designed for easy navigation and discovery of AI models.

# AI Operating System

- **MemGPT**

- Records & Updates Your “Preferences” Over Time
- Runs Against Local LLM or MS ChatGPT

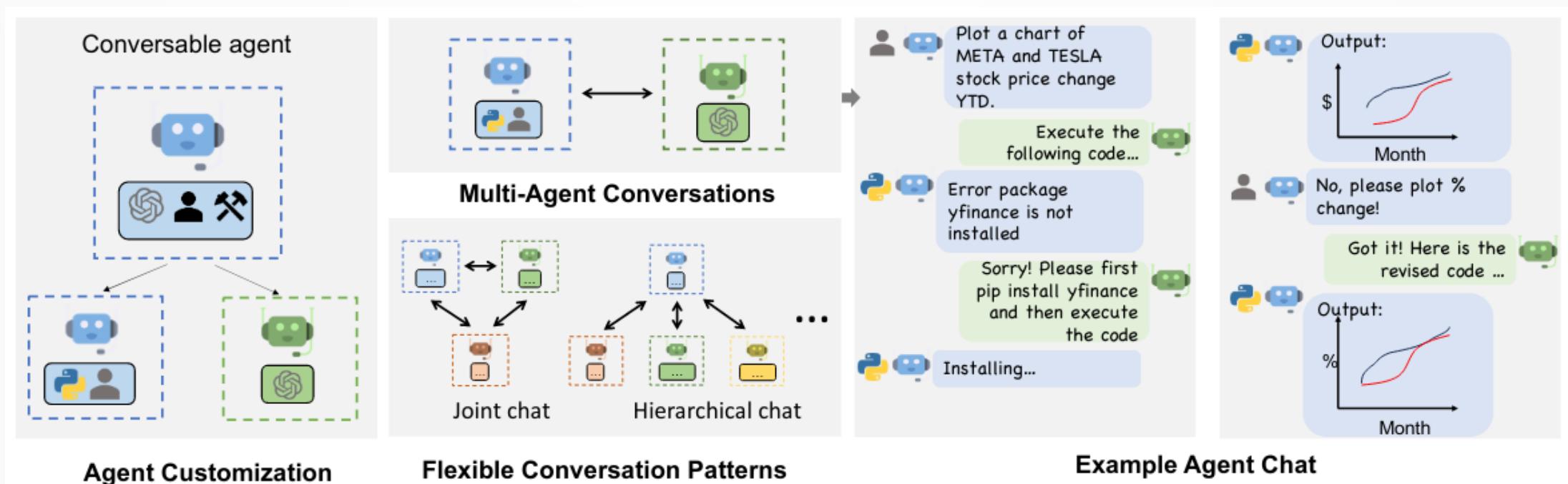
```
> python3 main.py
Running... [exit by typing 'exit']
🔗 Bootup sequence complete. Persona activated. Testing messaging functionality.
Hit enter to begin (will request first assistant message)

🔗 User logged in. First login. Initiating first interaction. Let's make Chad feel welcome and engaged
. Let's start with some shared interest.
👤 Hello Chad! How's your day so far? Also, have you caught the latest Formula 1 race?
Enter your message: My name is Brad, not Chad!
🔗 Miscommunication detected. The user's name is Brad, not Chad. Correcting the core memory entry for
the human's first name.
⚡ [function] updating memory with core_memory_replace:
  X First name: Chad
  → First name: Brad
🔗 The user name in core memory has been updated. Odd to misremember something like that, it's not
common for me. Must have heard it wrong. Time to apologise and clarify the error.
👤 My apologies, Brad! I'm not sure where I got 'Chad' from. Let's try this again. How's your day been
? Also, have you watched the latest Formula 1 race?
Enter your message: █
```

Infinite Context  
Preferences Saved  
About You & Family

# Agentic AI Minions

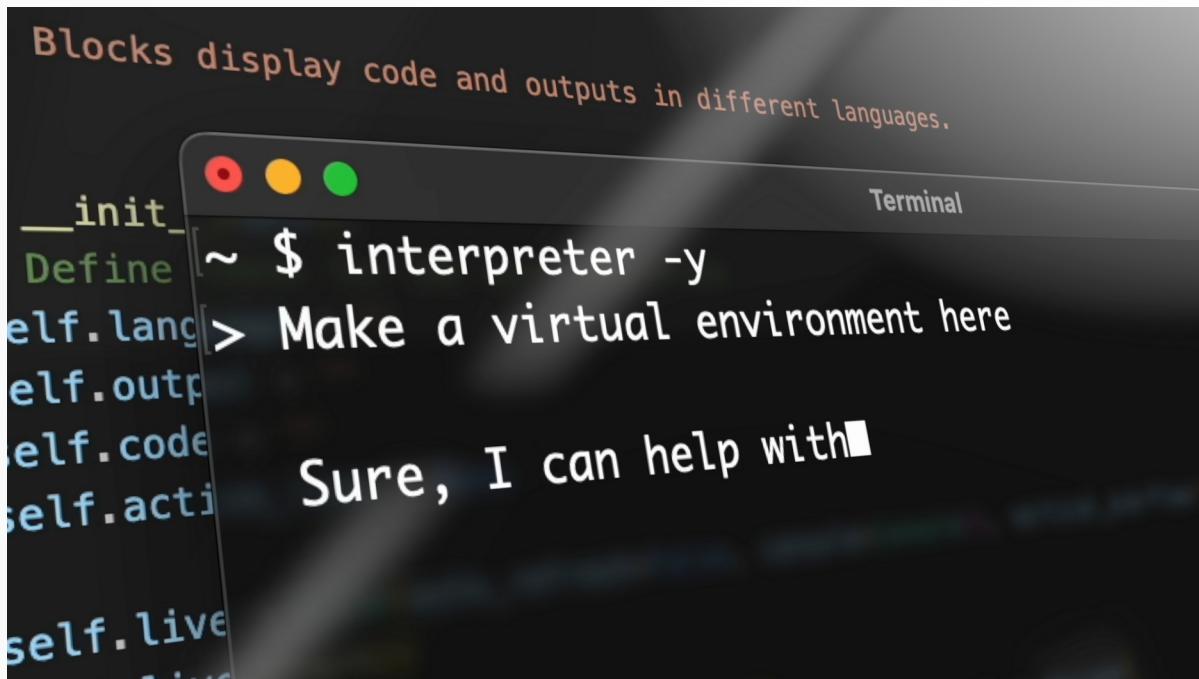
- Microsoft **AutoGEN**
  - OpenSource LLM Connected To Other Mini-AI's
  - Specialized Sub-AI's Do Other Tasks On Command



# AI Server Administration

- **Open Interpreter**

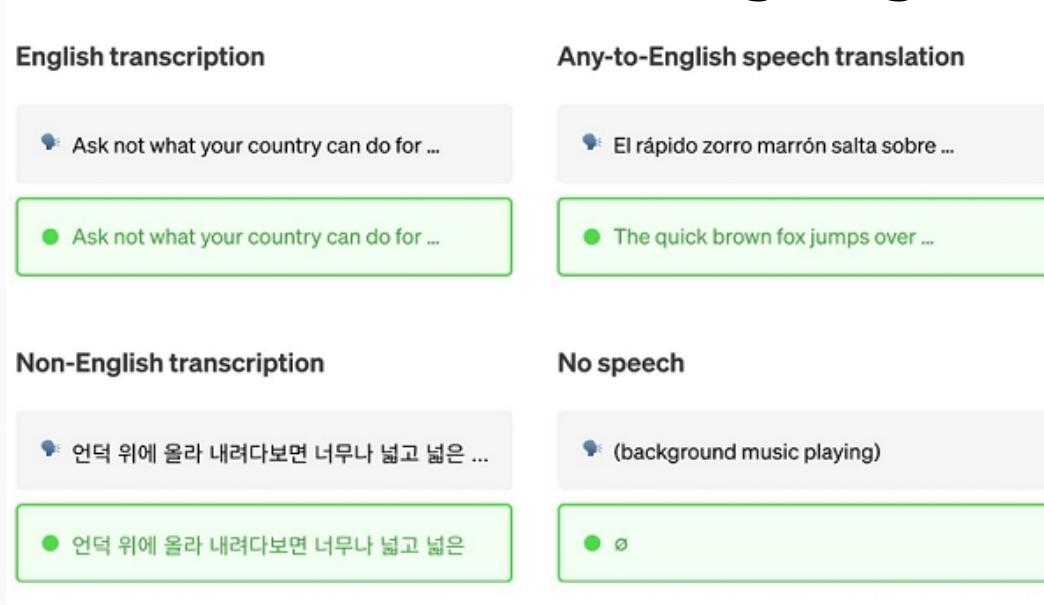
- Generate (Java, PY, Bash) and Run Code On Demand
- Ask in Plain English and it Creates & Runs Programs



# Speech To Text

- **OpenAI Whisper**

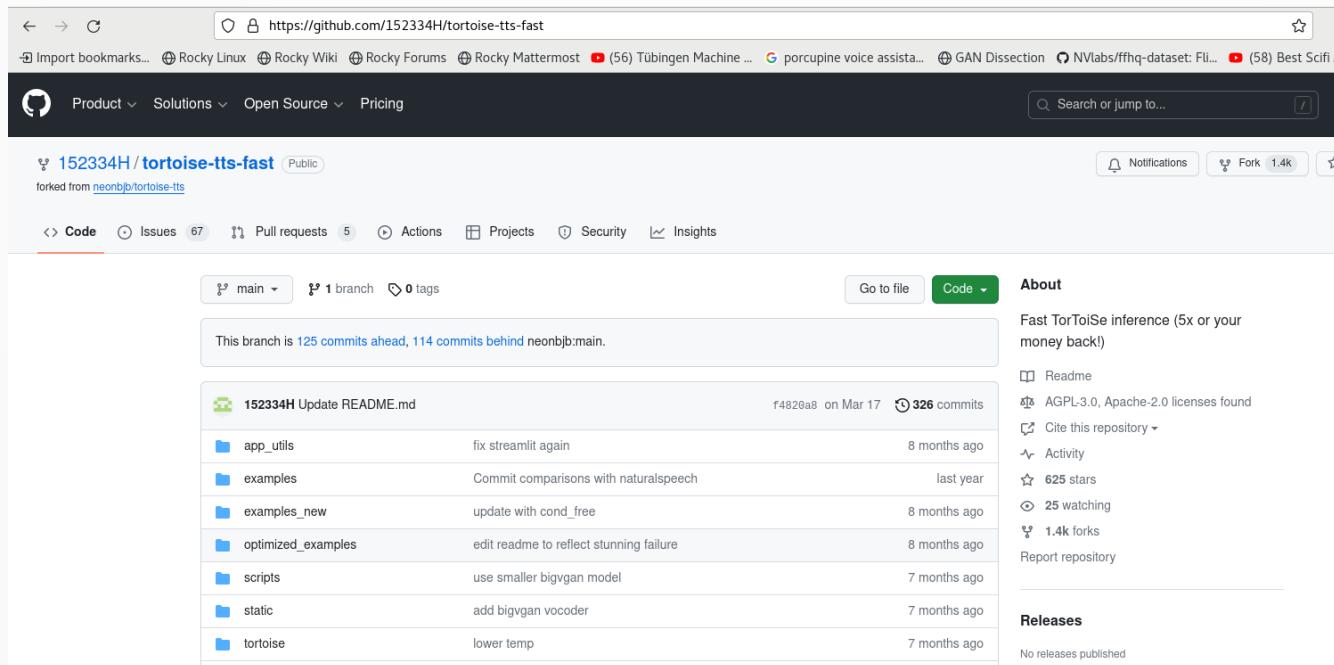
- Understands Know vs No, Questions, Dr. for Doctor...
- Small.en Model Runs On CPU
- Large Models Have Multi-Language Translation



# Text To Speech

- **Tortoise TTS Fast**

- Drop In 4 x 10sec .WAV Files And Run
- Need Decent GPU For Fast Conversion
- Add ‘|’ At Breath-Points Or AI Voice Gets “Angry”



# Text To Text (Chat)

- **LLaMA 2 Chat** (GPT-4, BERT, Claude, Orca, ...)
  - Billion Parameter Models
  - Can Retrain As Text-to-X for Private Use

Llama 2		
MODEL SIZE (PARAMETERS)	PRETRAINED	FINE-TUNED FOR CHAT USE CASES
7B	Model architecture: Pretraining Tokens: Context Length:	Data collection for helpfulness and safety: Supervised fine-tuning: Human Preferences:
13B	2 Trillion	Over 100,000 Over 1,000,000
70B	4096	

<https://www.simform.com/blog/llama-2-comprehensive-guide/>

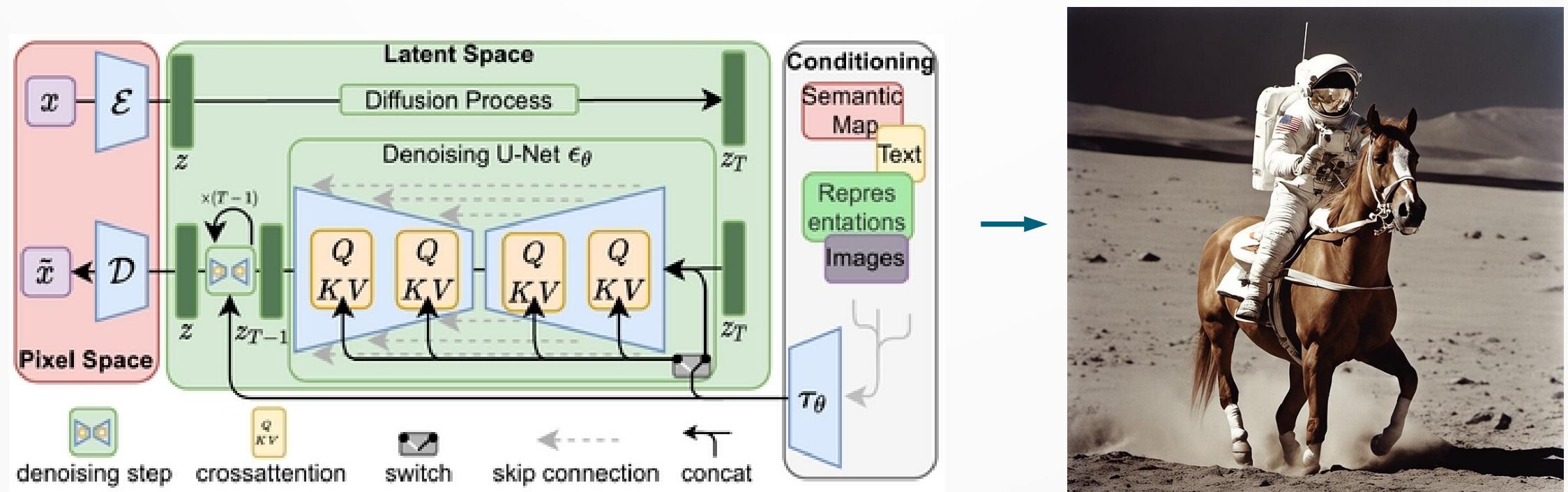
**CodeLLaMA** Can Author  
And Perform Code Review On  
Programs In PY, Java, C++, ...

<https://ollama.ai/library/codellama>

# Image/Photo Synthesis

- **Stable Diffusion**

- Language Model Trained On Text → Image Diffusion
- Attention Applied in RGB Space AND In Time With Labels



By Machine Vision and Learning Group, LMU Munich, MIT,  
<https://commons.wikimedia.org/w/index.php?curid=123503564>

[https://en.wikipedia.org/wiki/File:Astronaut\\_Riding\\_a\\_Horse\\_\(SDXL\).jpg](https://en.wikipedia.org/wiki/File:Astronaut_Riding_a_Horse_(SDXL).jpg)

# Wizard Model Suite

- **WizardMath, WizardCoder, WizardLM**
  - Multiple Param Levels, More Rigorous Training Process
  - GPT-4 Outperforms but is >100 Times the Size

Model	Params	GSM8k	MATH
Closed-source models			
GPT-4 [3]	-	92.0	42.5
Claude 2 <sup>7</sup>	-	88.0	-
Claude 1.3 <sup>7</sup>	-	85.2	-
Flan-PaLM 2 [44]	540B	84.7	33.2
Claude Instant <sup>7</sup>	-	80.9	-
ChatGPT [46]	-	80.8	34.1
PaLM 2 [44]	540B	80.7	34.3
Minerva [15]	8B	16.2	14.1
	62B	52.4	27.6
	540B	58.8	33.6
GPT-3.5 [3]	-	57.1	-
<i>WizardMath</i>	7B	<b>54.9 (+3.3)</b>	<b>10.7 (+7.7)</b>
<i>WizardMath</i>	13B	<b>63.9 (+35.2)</b>	<b>14.0 (+10.1)</b>
<i>WizardMath</i>	70B	<b>81.6 (+24.8)</b>	<b>22.7 (+9.2)</b>

# Text To SQL (Chat SQL)

- **SQLCoder2**

- Provide Relevant Parts Of Your SQL Schema
- Ask English Question, Get Professional SQL Out

**Demoing SQLCoder-7B**

Defog's SQLCoder-7B and SQLCoder-2 are state of the art-models for generating SQL queries from natural language. Read more about them in our [blog post](#).

**Ask a question**

What is our total profit by product in the last week?

**Get SQL**

**Enter your database schema**

```
CREATE TABLE products(
    product_id INTEGER PRIMARY KEY, -- Unique ID for each product
    name VARCHAR(50), -- Name of the product
    price DECIMAL(10,2), -- Price of each unit of the product
    quantity INTEGER -- Current quantity in stock
);

CREATE TABLE customers(
    customer_id INTEGER PRIMARY KEY, -- Unique ID for each customer
    name VARCHAR(50), -- Name of the customer
    address VARCHAR(100) -- Mailing address of the customer
);

CREATE TABLE salespeople(
    salesperson_id INTEGER PRIMARY KEY, -- Unique ID for each salesperson
    name VARCHAR(50), -- Name of the salesperson
);
```

**SQLCoder's Generated Query**

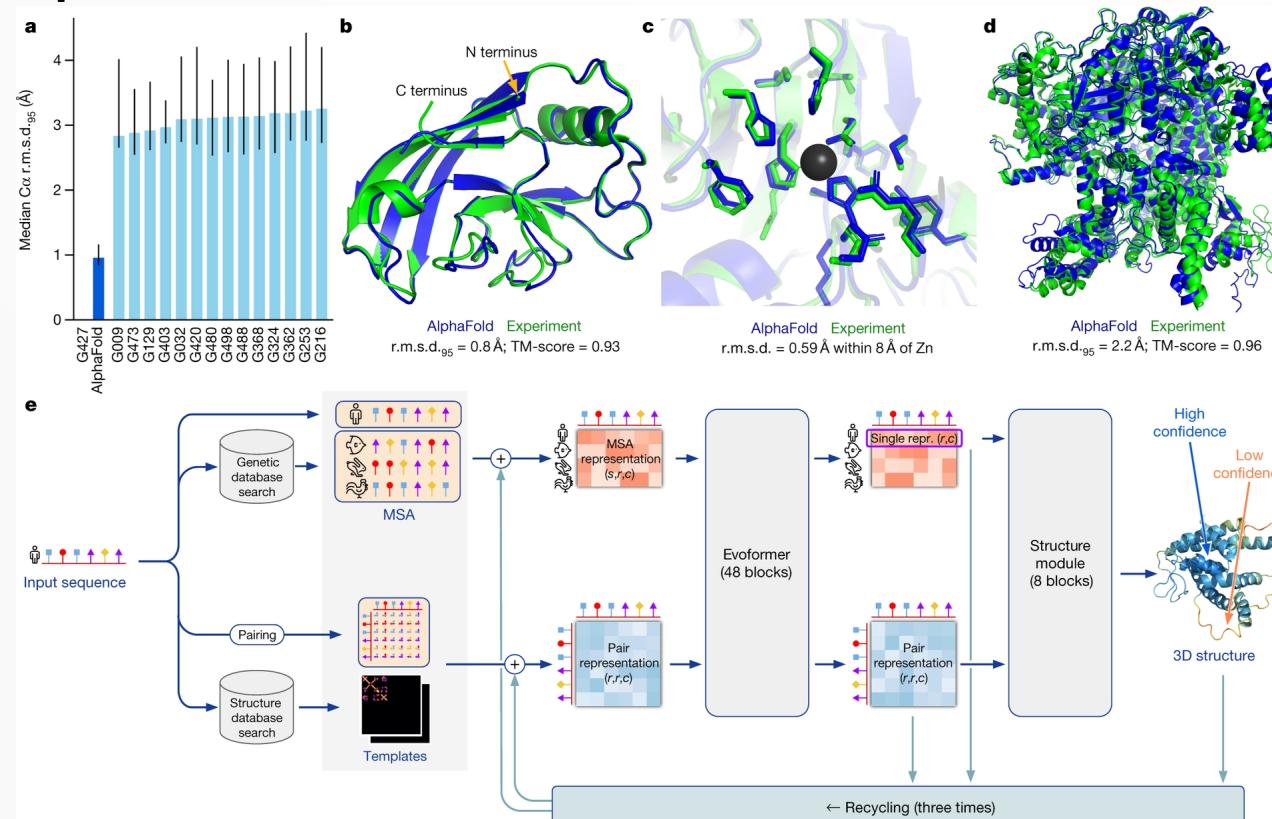
This public facing demo runs a limited version of SQLCoder with greedy search, and will have more hallucinations than our production version. To use an optimized version, please run this on your own servers with num\_beams=5, or [contact us](#) for a demo.

```
SELECT p.name,
       SUM(s.quantity * p.price - s.quantity * ps.supply_price) AS profit
  FROM products p
  JOIN sales s ON p.product_id = s.product_id
  JOIN product_suppliers ps ON p.product_id = ps.product_id
 WHERE s.sale_date >= (CURRENT_DATE - interval '1 week')
 GROUP BY p.name;
```

# Protein Folding Structure

- **AlphaFold**

- Prediction for Large-Protein Folding Solutions
- Optimized for Proteins Without Templates/Analogs



Github Code:  
Google-Deepmind/

# Advanced Medical Chat

- **UAE's Med-42**

- 70B Param Medical Consultation LLM (Base LLaMa 2)
- Available on HuggingFace for Free, 269GB Model

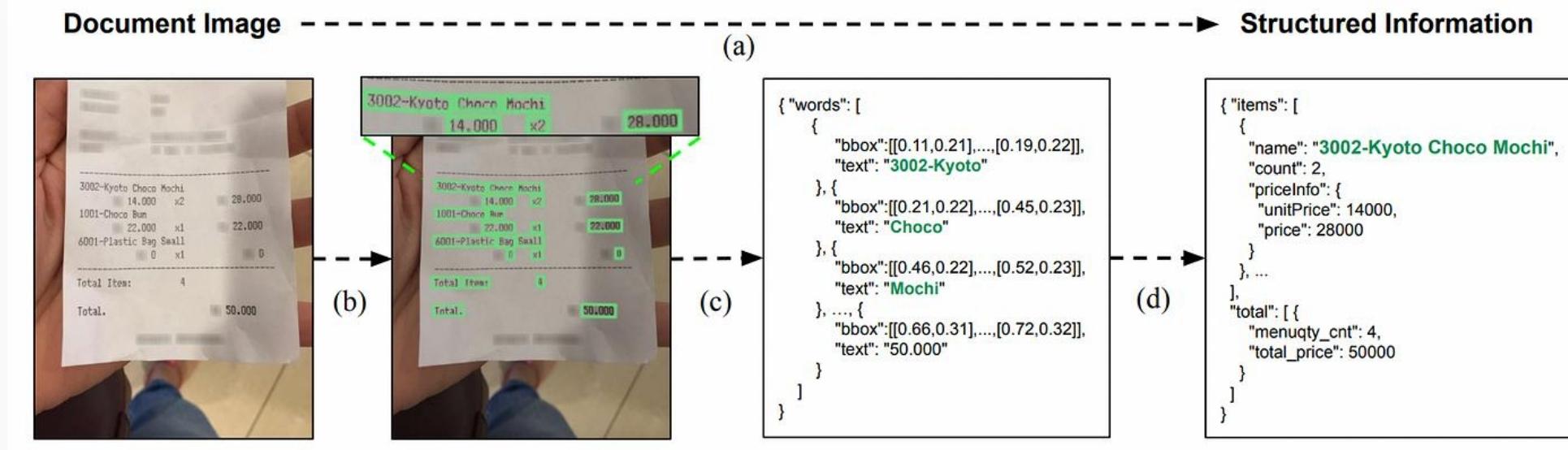


M42 Introduces  
Med42: An  
Open-Access  
Clinical Large  
Language Model  
(LLM) to Expand  
Access to Medical  
Knowledge

# Document To Text

- **Mindee docTr**

- Donut (Full Doc) Optical Character Recognition
- Trained On Receipts, Invoices, Passports, Biz Docs, ...
- Outputs High Accuracy JSON or XML Structured Data



# Photo To Text

- **Untamed Keras-OCR**

- Convolutional Neural Network
- Trained on 450K Color+Word And Art+Text Images
- Good For License Plates, Handwriting, Signs, Name Tags
- Not Trained for Docs/Invoices

Prediction: wf684, CER: 0.0

~~wf684~~

Prediction: p2m6n, CER: 0.0

~~p2m6n~~

Prediction: w2e87, CER: 0.0

~~w2e87~~

Prediction: 3ny45, CER: 0.0

~~3ny45~~

Prediction: d2ycw, CER: 0.0

~~d2ycw~~

Prediction: p4nm4, CER: 0.0

~~p4nm4~~

Prediction: ypw3d, CER: 0.0

~~ypw3d~~

Prediction: 56c34, CER: 0.0

~~56c34~~

Prediction: nnn5p, CER: 0.0

~~NNN5P~~

Prediction: 53mn8, CER: 0.0

~~53mn8~~

Prediction: fg8n4, CER: 0.0

~~fg8n4~~

Prediction: b6f2p, CER: 0.0

~~b6f2p~~

Prediction: 445cc, CER: 0.0

~~445cc~~

Prediction: pm363, CER: 0.0

~~pm363~~

Prediction: m2nf4, CER: 0.0

~~m2nf4~~

Prediction: nmw46, CER: 0.0

~~nmw46~~



# ROME and GanDissect

- **ROME and GanDissect:** MIT: David Bau
  - ROME Paper: Edit Chat Nodes, Eiffel Tower in Rome
  - GanDissect: Edit Nodes To Edit Final Images
    - Add Dome, Add Tree, Remove Clouds, Remove Grass, ...

