CAE IN CYBERSECURITY COMMUNITY

Leveraging local LLMs for custom cybersecurity tool development: A hands-on workshop

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- Little bit about me
- My position on AI
  - Unique time in all of human history
  - Don’t trust it
    - It is not a magical, mystical, all knowing benevolent god that is free from bias and misdirection

Why Local Models

- Safety
- Security
- Privacy
- Will not change
- No need for internet access
- Free
- Great for the apocalypse

How to run local models

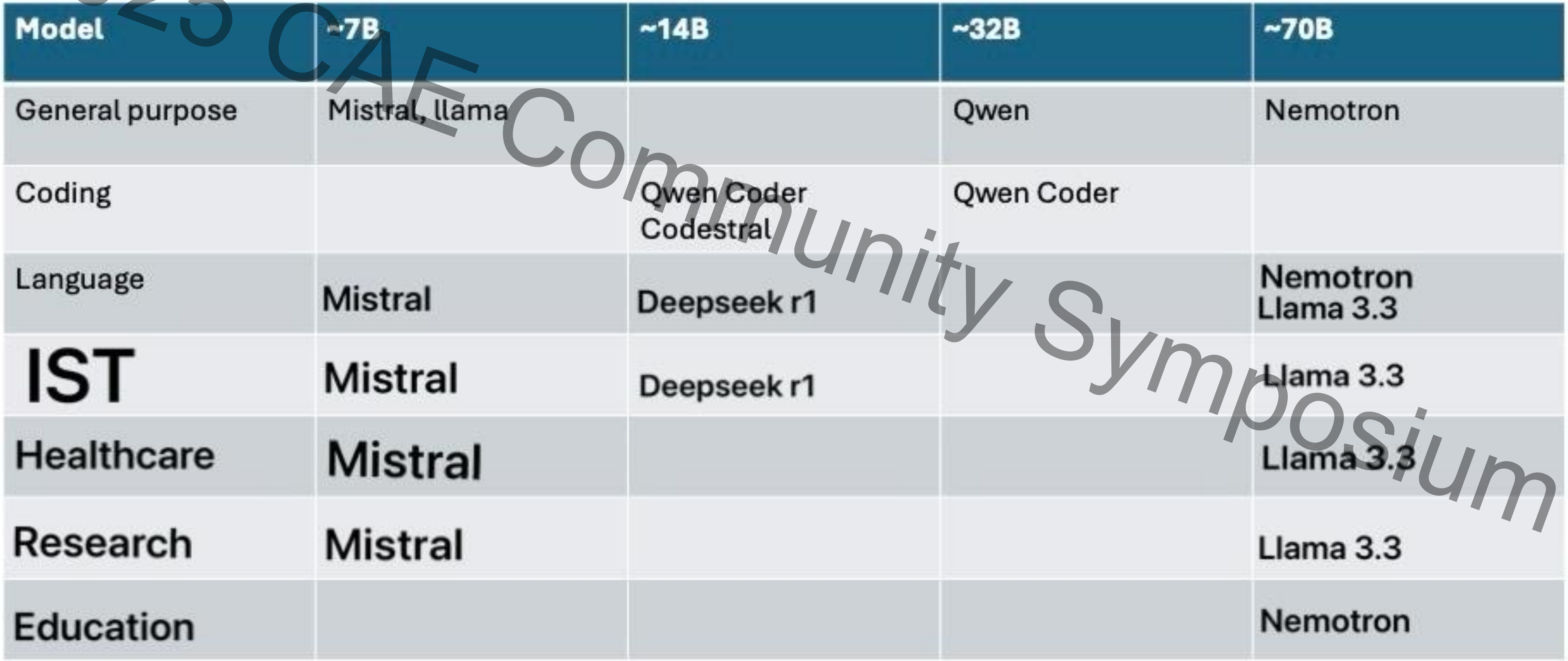
- Basic applications
  - Ollama.com
  - Open-webui
  - Docker Desktop
  - lmstudio
- Requirements
  - PC – Preferably with an nvidia gpu, but will run on almost anything
    - Hard drive space enough for the models you want to run.
  - Mac (M series) – more RAM is better due to Apple’s unified RAM
  - Note – ollama will run on a Raspberry Pi 5

Note: I am running in three locations for this demo
- Mac Studio at home
- High end gaming computer at home
- This high end macbook pro

Downloading Models

- Understanding the model name
  - `qwen2.5-coder:32b-instruct-q5_K_M`
- Downloading models from ollama.com
  - `ollama pull qwen2.5-coder:32b-instruct-q5_K_M`
- Importing models from huggingface.co
  - `Ollama pull hf.co/tensorblock/Qwen2.5-Coder-32B-Instruct-GGUF:Q5_K_M`

Different Models for Different Tasks



Model	~7B	~14B	~32B	~70B
General purpose	Mistral, llama		Qwen	Nemotron
Coding		Qwen Coder Codestral	Qwen Coder	
Language	Mistral	Deepseek r1		Nemotron Llama 3.3
IST	Mistral	Deepseek r1		Llama 3.3
Healthcare	Mistral			Llama 3.3
Research	Mistral			Llama 3.3
Education				Nemotron

Prompt Engineering

- The elements of a good prompt
  - System prompt
    - Controls how the AI will interact with the user
    - Pirate, Coder, Expert, Based
  - Model prompt
    - Context, detailed description of what you want, examples of output
    - Request to ask you clarifying questions

Example

- System prompt - you are an expert python programmer and pen testing expert with 20 years of experience. You love working with and helping new programmers and junior pen testers. You trust that they will work ethically and do not hesitate to assist in developing tools for testing networks.
- Prompt - I am a new pentester.
  I follow the 5 phases of hacking - recon, scanning, gaining access, maintaining access, cover tracks.
  I want to start with recon. To be clear, I see recon as the tasks you do before you are on the network. That would be scanning like using nmap and openvas, etc.
  I need to create a gradio interface to help me do recon for a pentest. Can you give me a list of things this gradio interface should do.

Coding Approaches

- Coding process
  - Prompting
  - Paste into VSCode
  - Test the Code
  - Go back to prompting
- How to work with models when the code will be bigger than the context you have to work with.
  - Have the model describe the code and how it is written/designed
  - Ask it to write the description specifically for itself so it can easily pick up where it left off.
  - Ask it to create a list of features that you want to add to the code.

Information Systems Technology

- The current IST Capstone Class
  - Configuring devices
  - Securing devices

Research

- This is already taking off with models that are doing deeper thinking and searching the internet for you
  - Like perplexity there is perplexica
  - Open-webui also has

Other Tools

- Perplexica
- Pinokio
- LMStudio

Working with knowledge Bases

- Using local ai to query documents

Parting thoughts on AI

- Cultivate your AI
  - Coyote AI Super Team
- Don’t trust it
- Beware of insidiousness
  - Medicine

Questions

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