From Text to Structure:

Unlocking AI's Superpower

Scott Bromander - Applied AI Conf - Nov 3rd, 2025 - Minneapolis, MN

Hi, I’m Scott

DEMO TECHNOLOGIES

Web Based

Easier to share within a Conference setting. Applications can connect to web based services however, so the client application is not as important. But internet is required to leverage this technology.

OpenAI APIs

There are other options, but OpenAI's API is easier to understand at a glance, which is great for teaching.

Python/FastAP I

Most of the 3rd party SDKs are written in Python. FastAPI is a great backend choice for rapidly developed prototypes.

React

Front End presentation layer written in JavaScript's most popular framework.

Goal of this Talk

"To understand **Structured Data Outputs (SDOs)**,
to add to your ideation tool kit."

Basic LLM Usage

Input

We enter
some text...

LLM

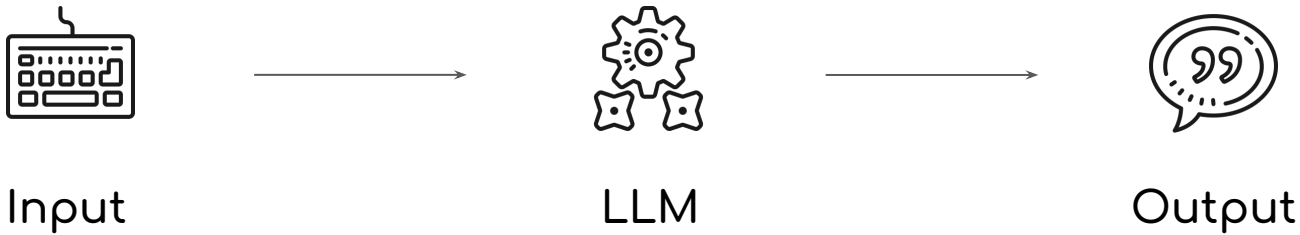
The Large Language Model
thinks about it...

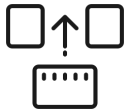
Output

Typically some kind
of text comes back.

This is the regular user pattern in ChatGPT, Gemini, etc.

Basic LLM Usage



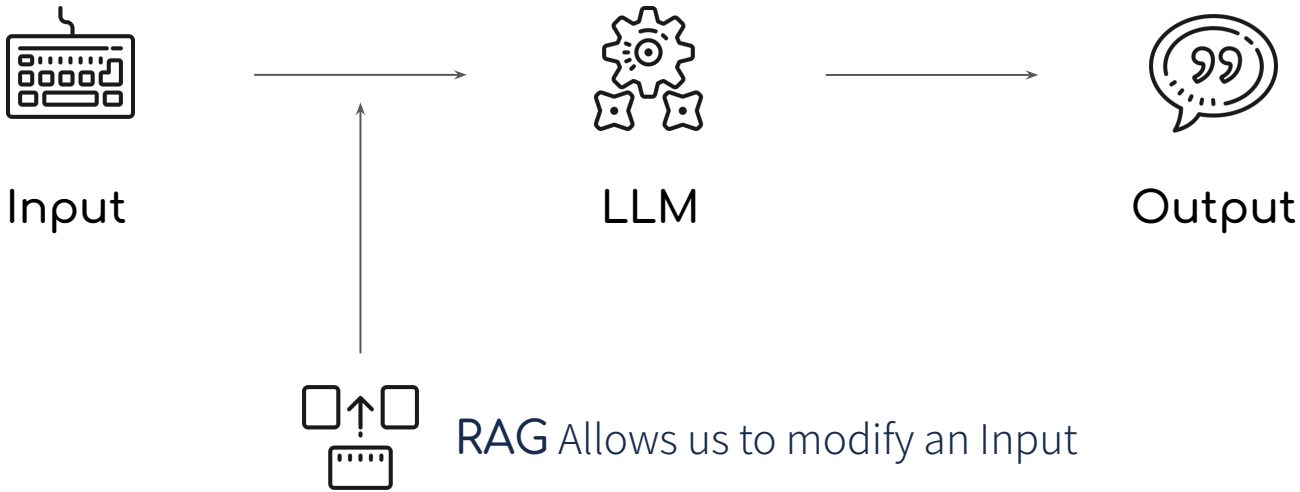


RAG

Retrieval Augmentation Generation

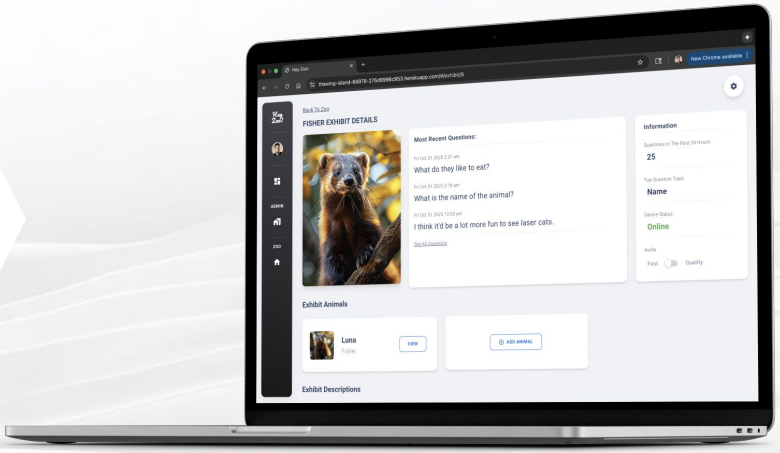
Retrieval Augmentation Generation, “RAG” is about retrieving task-relevant info from any store and augmenting the model’s prompt with it before generation.

Basic LLM Usage

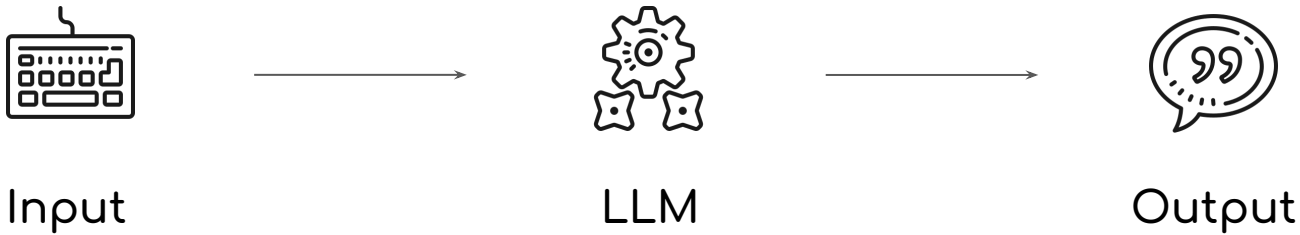


Demo - HeyZoo

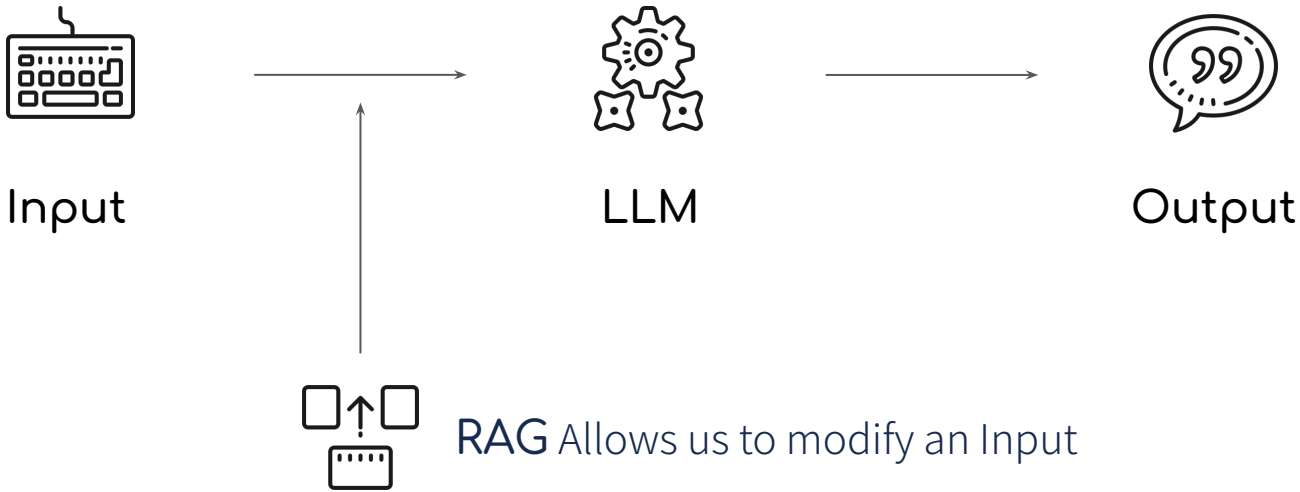
Quick Example of RAG



Basic LLM Usage



Basic LLM Usage



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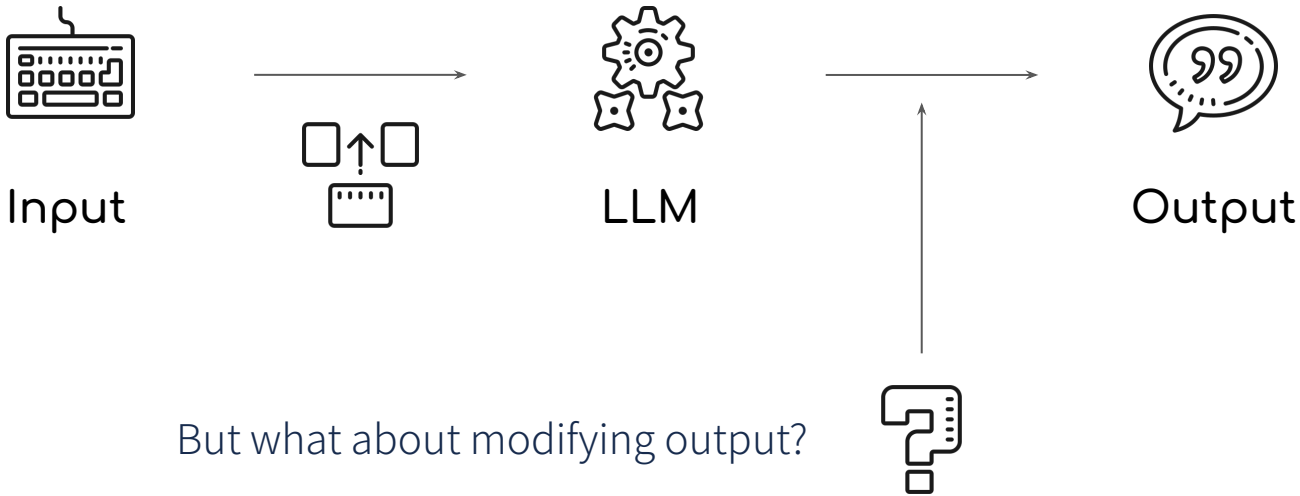
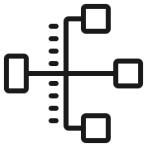




Structured Data Output (SDOs)

Structured Responses from our LLMs

Structured Data Outputs are AI outputs formatted in a predictable structure, instead of free-form text. This format makes it easy for applications to reliably extract and use information without guessing or parsing natural language.

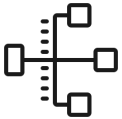
By returning data in a defined schema, AI systems can seamlessly integrate with other tools, APIs, and database.

What's the Difference?

LLM

"Describe Scott and what he's doing.""

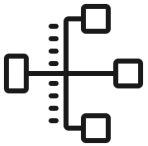
"Scott Bromander is the presenter of this talk at Applied AI Conf. He is 6 ft tall and is an AI consultant."



SDO

"Describe Scott and what he's doing.""

name : "Scott Bromander",
title : "AI Consultant",
height: "6 ft",
current : "Presenter",
location : "Applied AI Conf"

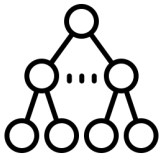


Structured Data Output (SDOs)

Structured Responses from our LLMs

As application creators, we can use AI responses in the applications we design.

We can shape the data from those responses. We do this by defining a “Schema”.



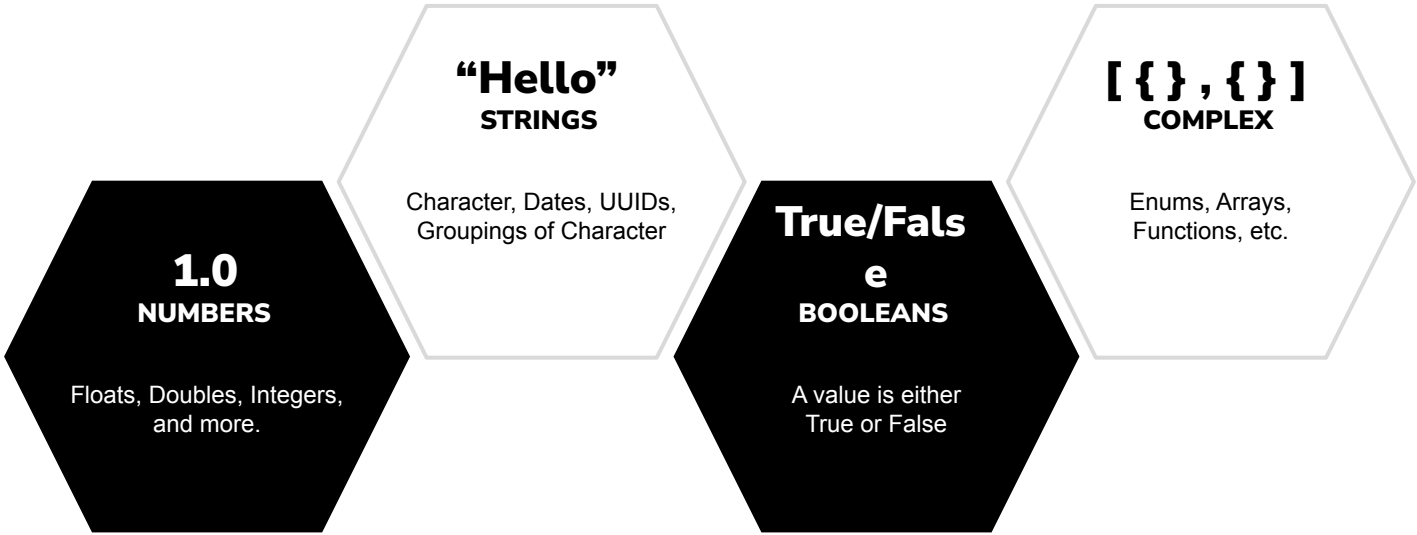
Schema

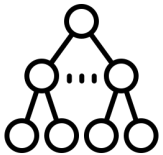
Form for Function

A schema is a concise blueprint that defines the fields and types an AI (or any system) should return, so apps can use the data reliably without guessing.

Developers define the Data “Shape” that the AI should fit the response into.

DATA TYPES IN A NUTSHELL





Schema

Form for Function

A group of Data Types, along with their “keys” can be referred to as a Schema. Also sometimes called the data “Shape”.

```
{
   name : “Scott Bromander”,
   title : “AI Consultant”,
   height: “6 ft”,
   current : “Presenter”,
   location : “Applied AI Conf”
}
```

Basic LLM Usage

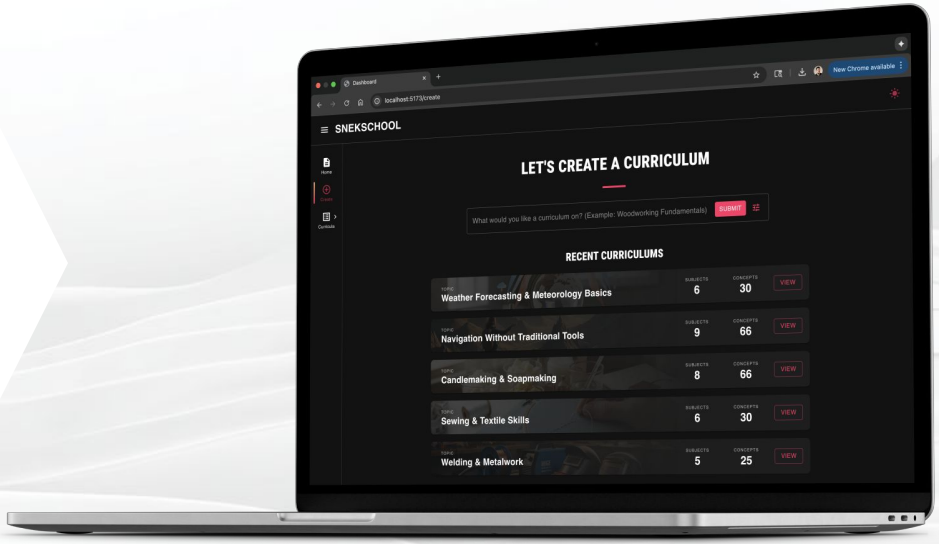
We use **Schemas** to produce **Structured Data Outputs**

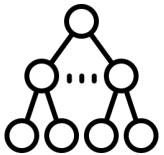
Key Point

"**Structured Data Outputs (SDOs)**,
are the bridge between LLM and Application."

Let’s See it in Action!

Demo: SnekSchool





Schema

Simplified Schema for SnekSchool

Topic

- name : String
- description : String
- Subjects : List

Subject

- name : String
- Concepts : List

Concept

- topic : String
- notes : String

WHAT ELSE COULD WE MAKE WITH SDOs?

Some Examples:

HR

Convert Job Posting to Interview Guide

Spider Map Candidate Skills to Job Posting

Healthcare

Formless Intake, Map Chat History to Pre-filled Form

Stream Video Conference with Patient into Pre-filled Assessment

Productivity

Pipeline Meeting Video Transcript to Asana Tasks

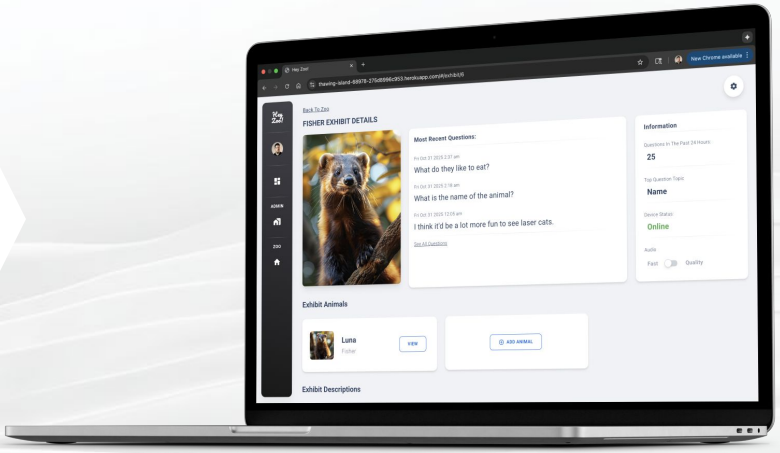
Convert Video Interviews to Blog Posts and other Social Content.

Key Point

"**Schemas and Structured Data Outputs (SDOs)**,
are great at some things - but it's a scalpel, not a sledgehammer."

Demo - HeyZoo

Quick Example of Tagging



Considerations

CONSIDERATIONS OF STRUCTURED DATA OUTPUTS

Structured Data Outputs

Keep it Shallow

Going too deep in a Schema can yield poor results. If needed, break steps across multiple calls.

Right Shape != Right Facts

As always, LLM results are not perfect. Expect the same accuracy as you would see in ChatGPT, etc.

SDOs are NOT Security

Schemas shape data, they don't make it trustworthy. Use proper controls: PII redaction, rate limits, auditing, and human/logic checks, outside the schema.

OTHER CONSIDERATIONS

Structured Data Outputs

Cost!
(Ai FinOps)

API calls like this can get $$$ when considering scale. $0.01 - $0.03 per interaction, multiple times an hour, across millions of users adds up.

Latency
More = More

The more complex the call, the more time your user will be waiting. Consider the design and when those calls happen.

Hammer/Nail
Problem

SDOs are just a tool. Use traditional logic whenever you can.

The Future

Local AI

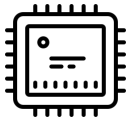
Local meaning "Our Hardware"

Models like OpenAI's GPT-oss can already use Structured Data Outputs. Other providers are likely to follow suit.

While the best models may be online, great models will be available offline.

LOCAL AI

AI Models installed on our Home Devices



AI Chips More Storage

Hardware manufacturers have shifted to talking about how their hardware supports AI.

Offloaded Load

"What can be shifted to the consumers device?" is a stance I have already seen in our industry.

Better Open Source Models

Models can already support SDO locally, but we will see better, faster, lighter versions in the near future.

Other Hardware

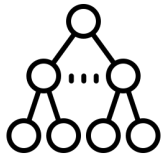
More than just our Computers

AI in our TVs may not make sense.
Until they are capable of rendering entire movies.

AI in our Playstation? Why not, developers can can hook into it to create endless games.

Let’s See it in Action!

Demo: SnekTL

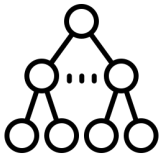


Schema

Simplified Schema for Crew Members

CrewMember

- name : String
- gender: String
- age: Number
- role: String
- backstory: String
- motivation: String
- appearance: String
- mood: int
- img_prompt: String
- portrait_url: String

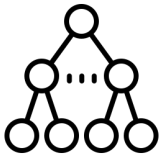


Schema

Simplified Schema for Events

Event

- title: String
- description: String
- options: List[Options]
- img_url: String
- narration_url: String
- locations: List[SciFiLocation]
- selected_location: SciFiLocation
- encounter: EncounterLite



Schema

Expanded Schema for Events

Event

- title: String
- description: String
- options: List[Options]
- img_url: String
- narration_url: String
- locations: List[SciFiLocation]
- selected_location: SciFiLocation
- encounter: EncounterLite

Option

- outcome_header: String
- outcome_text: String
- stat_changes: StatChanges

StatChanges

- hull: int
- scrap: int
- fuel: int
- missiles: int
- drones: int

SciFiLocation

- name: String
- scientific: String
- category: String

EncounterLite

- title: String
- category: String
- summary: String
- tags: List[String]

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Key Points

"Schemas and Structured Data Outputs (SDOs),
are the bridge between LLM and Game/Application."

"Schemas and Structured Data Outputs (SDOs),
are great at some things - but it's a scalpel, not a sledgehammer."

BTW, this is “Snek”



Just in case you were wondering why everything is named “Snek”.
Its the ground squirrel that lives in our yard.

THANK YOU!

I'm Scott Bromander

AI, Product, and Engineering

Let's Connect!

LinkedIn:
https://www.linkedin.com/in/scott-bromander/

Content and Freebies on my Website!

https://www.Aftercamp.io/