

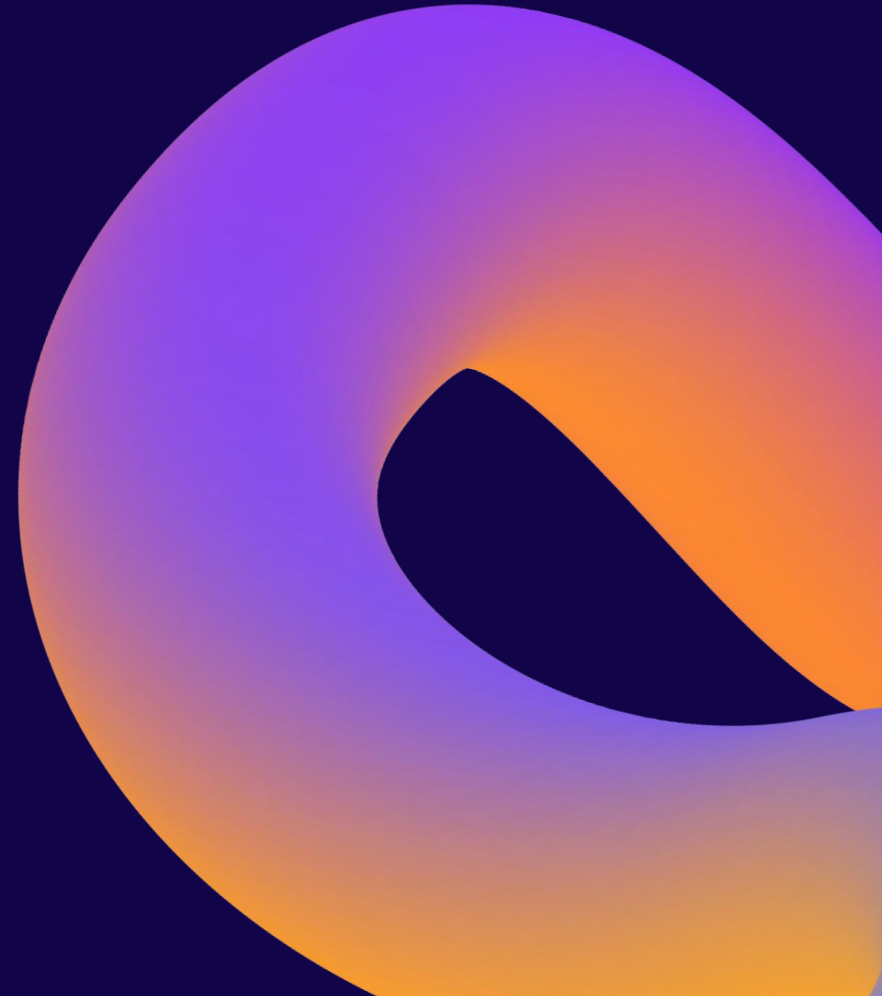
# Azure-ish SQL and Azure AI 101

**Matt Gordon**

He/him

Practice Director, Data & Analytics

Apps Associates



# Matt Gordon

He/him

Practice Director, D&A  
Apps Associates



[matt.gordon@appsassociates.com](mailto:matt.gordon@appsassociates.com)



<https://www.linkedin.com/in/sqlatspeed>



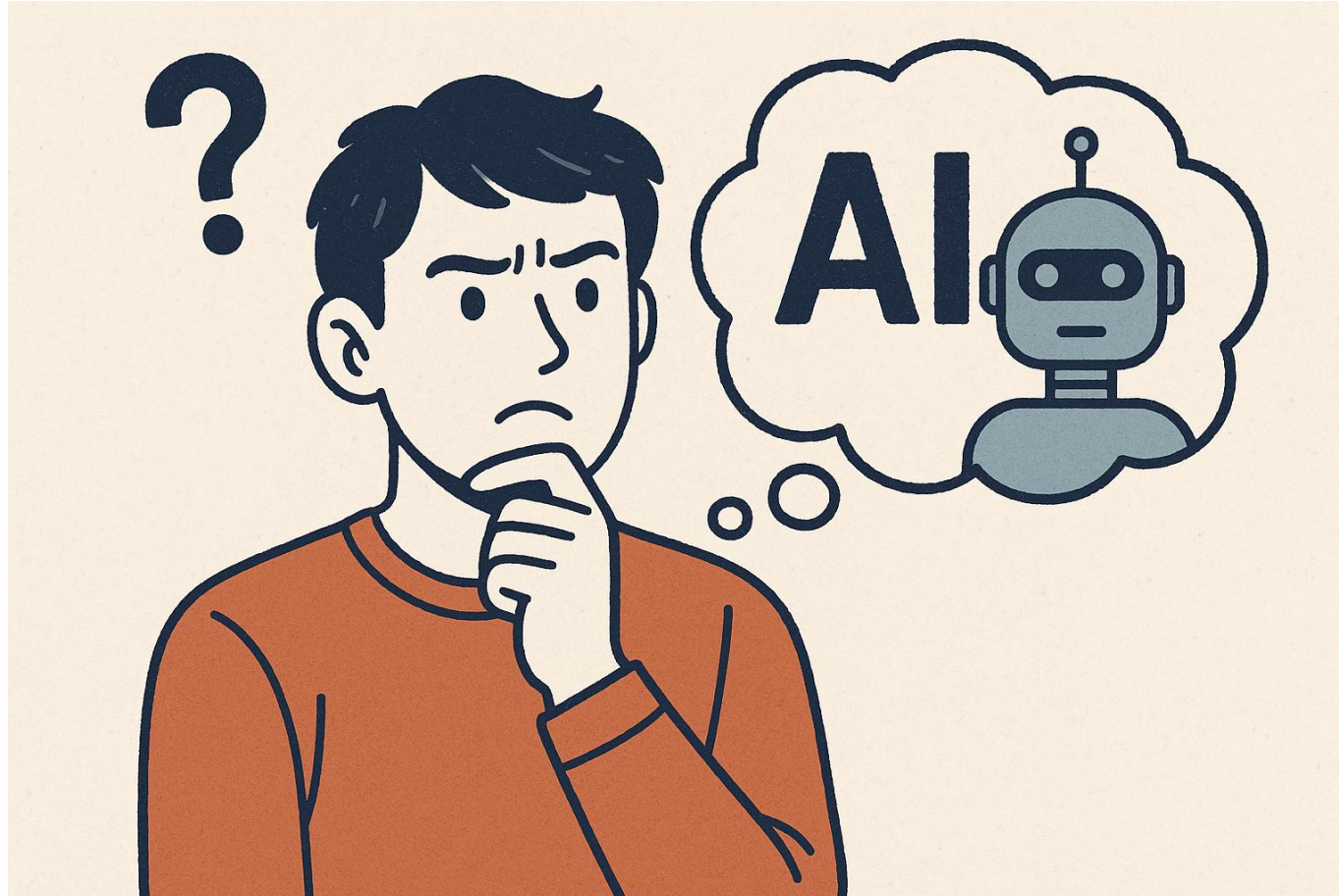
<https://sqlatspeed.com>



# About Me

- Published books on Azure AI and data migration
- Data work for 20+ years, AI work for the last 8
- Microsoft MVP and Redgate Ambassador
- Lexington Data Technology Group co-organizer

# What Do We Think of AI?



# Where Does Our SQL Stuff Live?





# Where Are We Headed Today?

- How can it help me do my daily work?
- How can it help improve my technical users' search experience?
- How can it help me describe and document?
- How can it help my non-technical users' data discovery work?
- What will I be able to do next (or even now-ish)?
- Q&A

**“Copilot all the things!”**

No one, ever

# Copilot in SQL Server Management Studio 21

- Requires SSMS 21 and Azure OpenAI resources
  - OpenAI endpoint and model deployment
- Can talk to anything SQL Server-ish
- No need to demo setup as docs are good
- Queries executed under the user's security context



# Copilot in SQL Server Management Studio 22

- Requires SSMS 22 (in Preview 3, which came out last night)
- Requires GitHub Copilot subscription (there is a free, personal option)
- Can talk to anything SQL Server-ish
- SSMS 21 Copilot support via OpenAI continues with no updates
- Feature equivalence will take “a few releases” per Microsoft

# What Can I Do With Copilot in SSMS 21?

- Use the chat window
  - Defaults to read-only but can do read-write with/without approval
- Use “assistants” in the editor window
  - Document, Explain, Fix, Refactor
- Environment discovery, test data generation, etc.
- Performance tuning?!

**DEMO TIME**



# Want More Control of the Automagicness?

- AI-based T-SQL Refactoring [here](#)
- We can control the models used
- We can control the temperature
  - Low means more deterministic
  - High means “more creative”
- GitHub repo [here](#) – let’s take a look...

# Vector Support in Azure-ish SQL

- GA in Azure SQL now, preview in SQL Server 2025 (preview)
- Azure SQL Devs' Corner best Azure SQL/AI resource online (link on Resources slide)
- What is actually supported?

# What's Supported for Vectors, Victor?

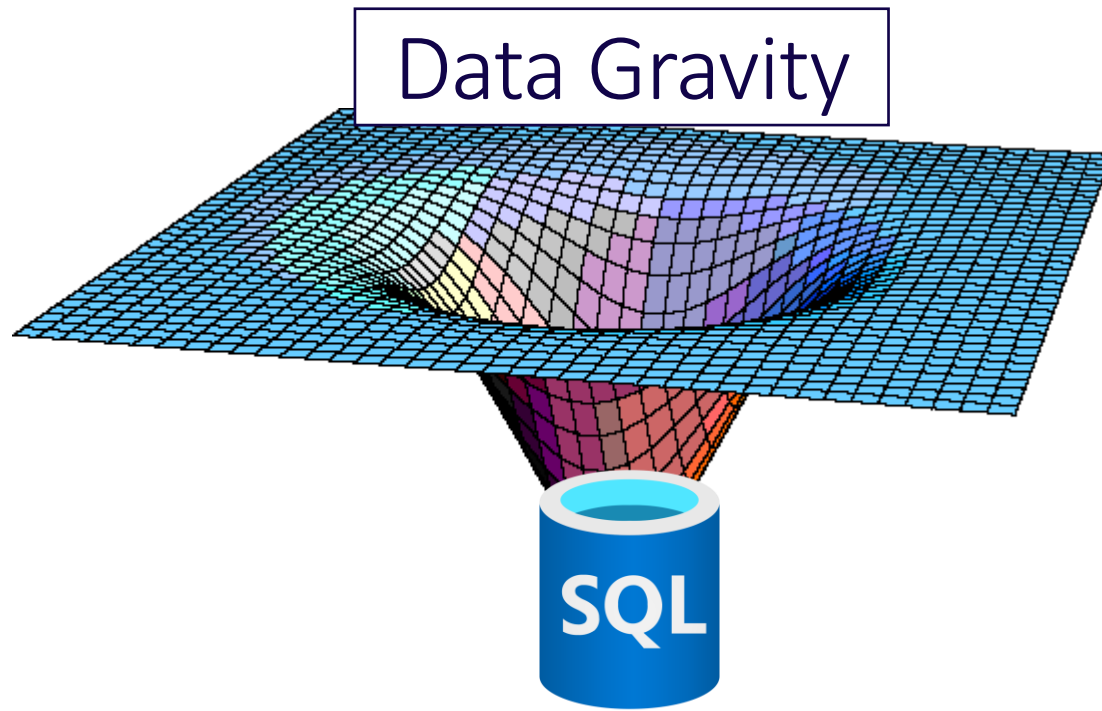
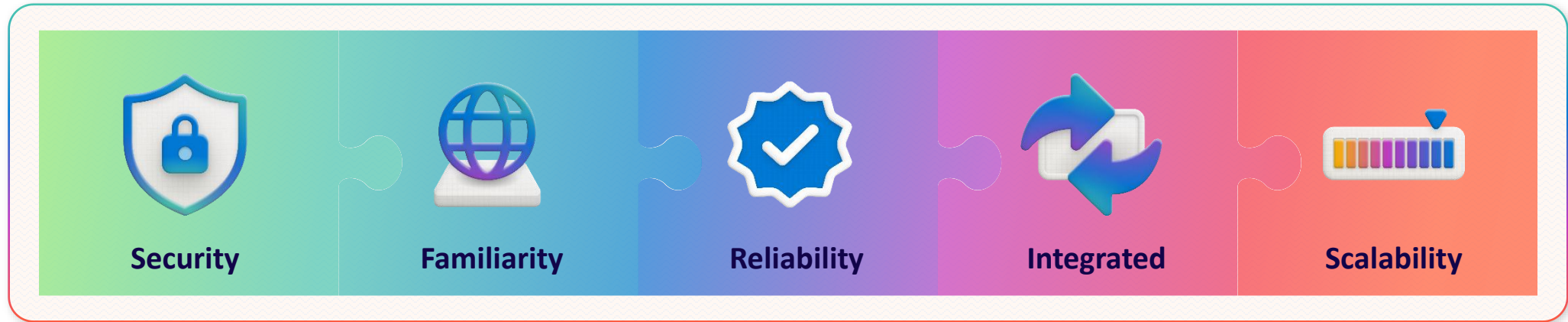
- New VECTOR data type
- Built-in VECTOR functions
  - VECTOR\_DISTANCE
  - VECTOR\_SEARCH
  - VECTOR\_NORM
  - VECTOR\_NORMALIZE
  - VECTORPROPERTY
- CREATE\_VECTOR\_INDEX w/ DiskANN
- So what does any of this actually mean?

# Why SQL for AI apps?

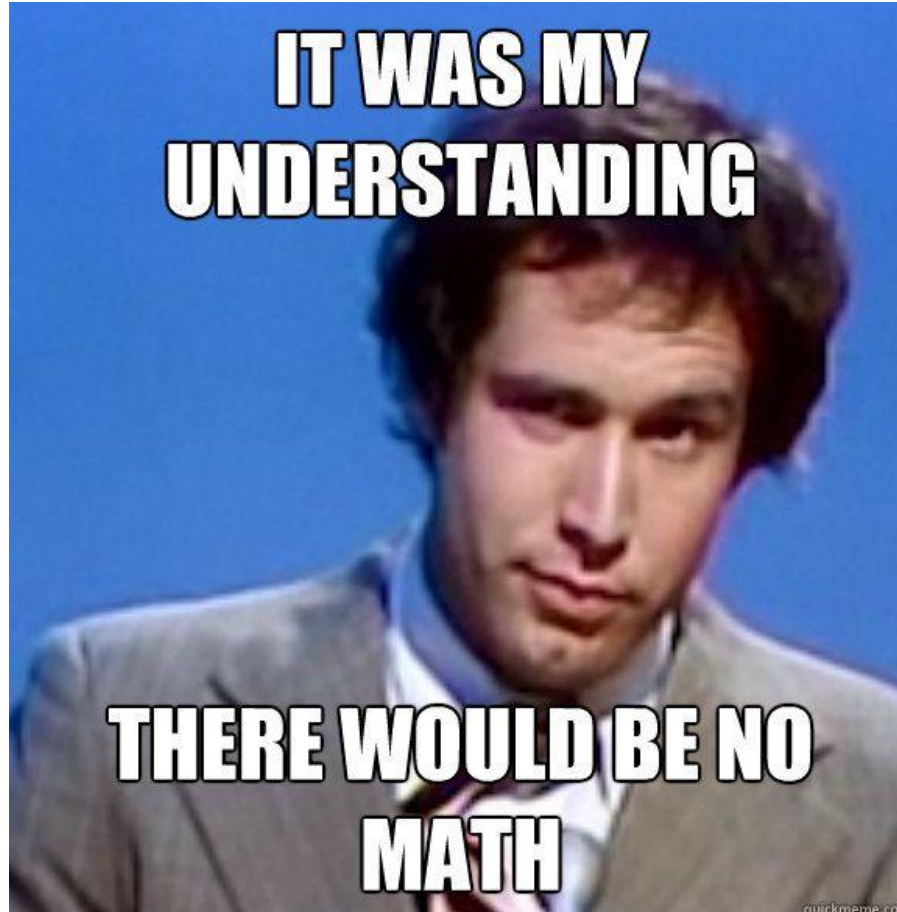




# Why SQL for AI apps?



# Apologies in Advance...



# Vectors and Embeddings

## Feature Vector

Ordered array of numbers typically created by a human to train a model

*[Height, Weight, Age, Fur Length, Energy Level]*

## Embedding

Vector generated by a model that has semantic meaning

dog: [0.9, 0.3, 0.2, ...]

Image of a dog: [0.9, 0.3, 0.2, ...]

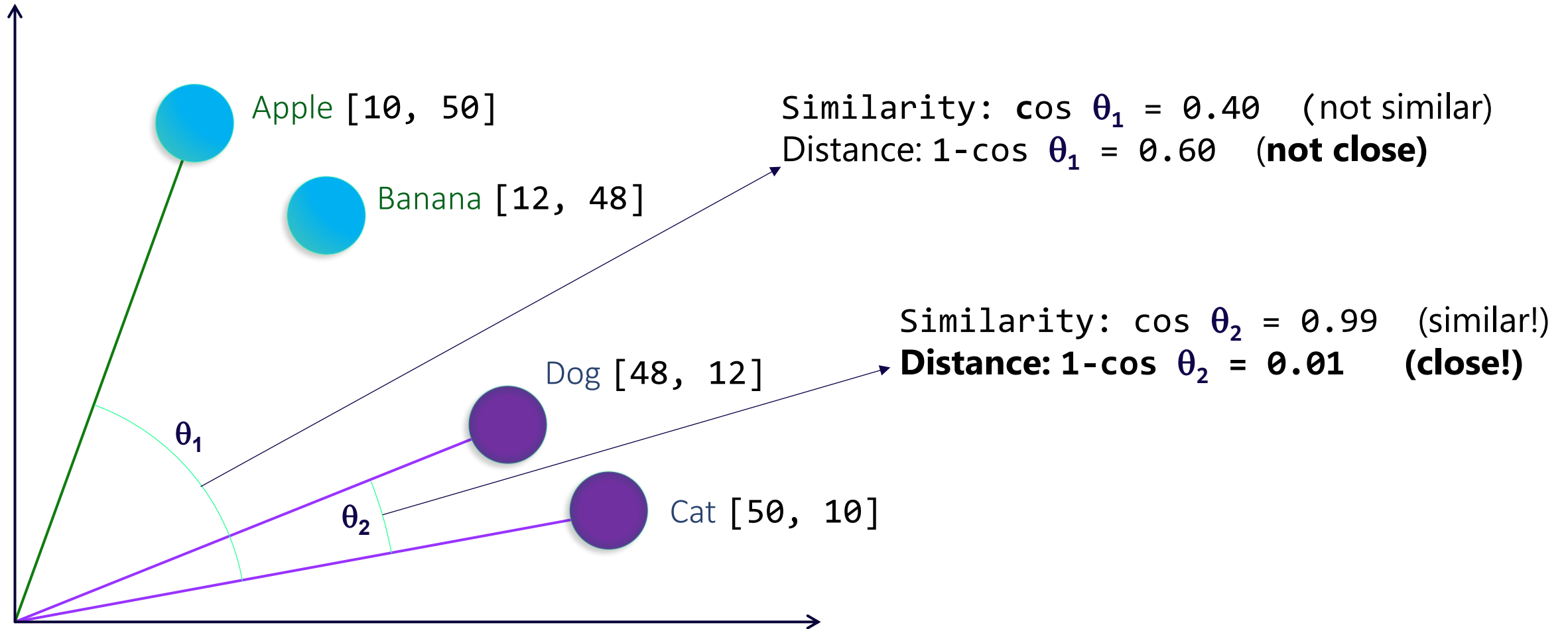
puppy: [0.88, 0.33, 0.21, ...]

"I took the dog for a walk": [1.5, -0.8, 2.1, ...]

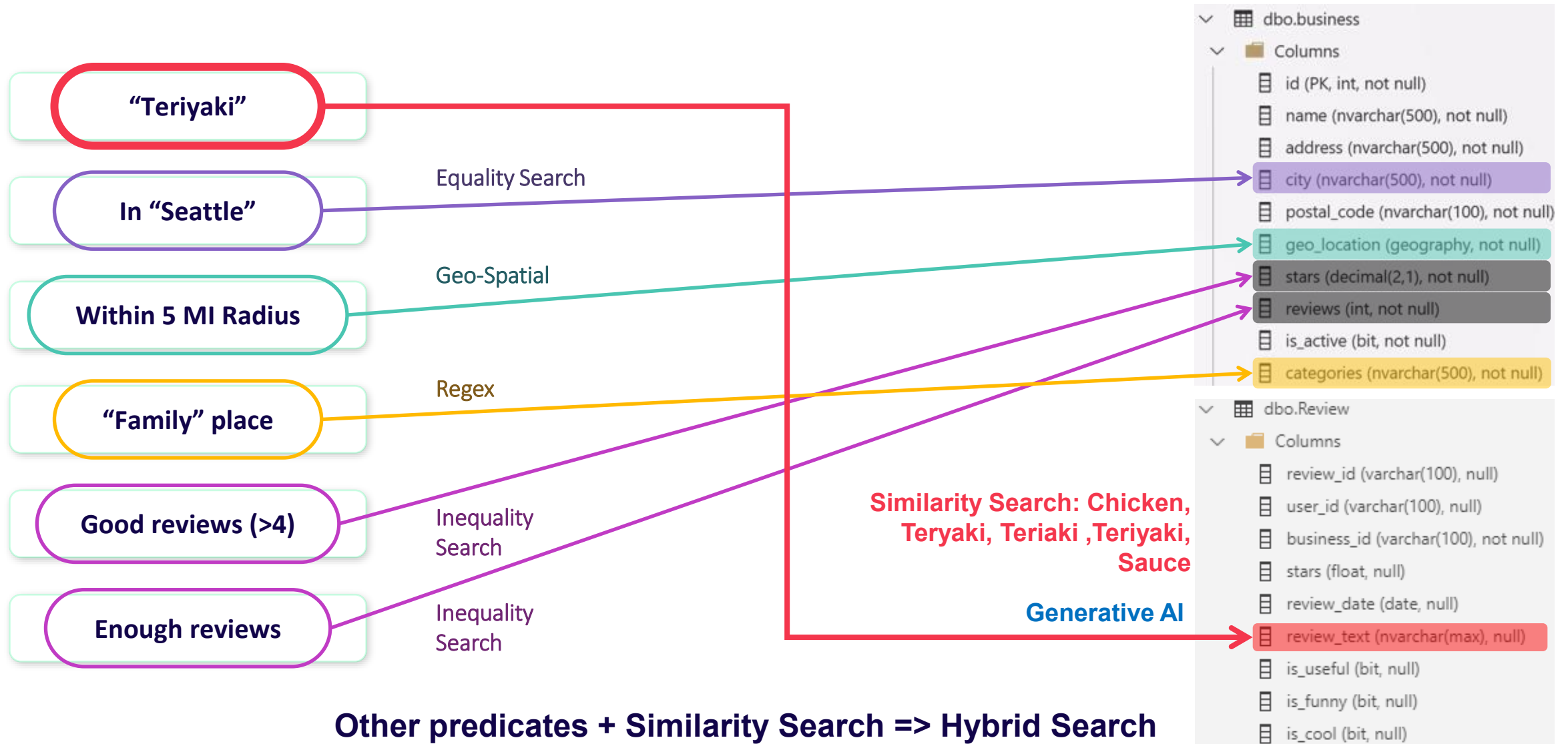
“dog”



# Similarity Searching using Cosine



# Why vectors in a modern relational database?



# What Can I Actually Do With Vector Support?

- Semantic search
- Retrieval-augmented generation (RAG)
  - Great dev-heavy RAG accelerator on Resources slide
- Chat experiences
- Conversational agents

# After that post-pizza math, back to T-SQL...

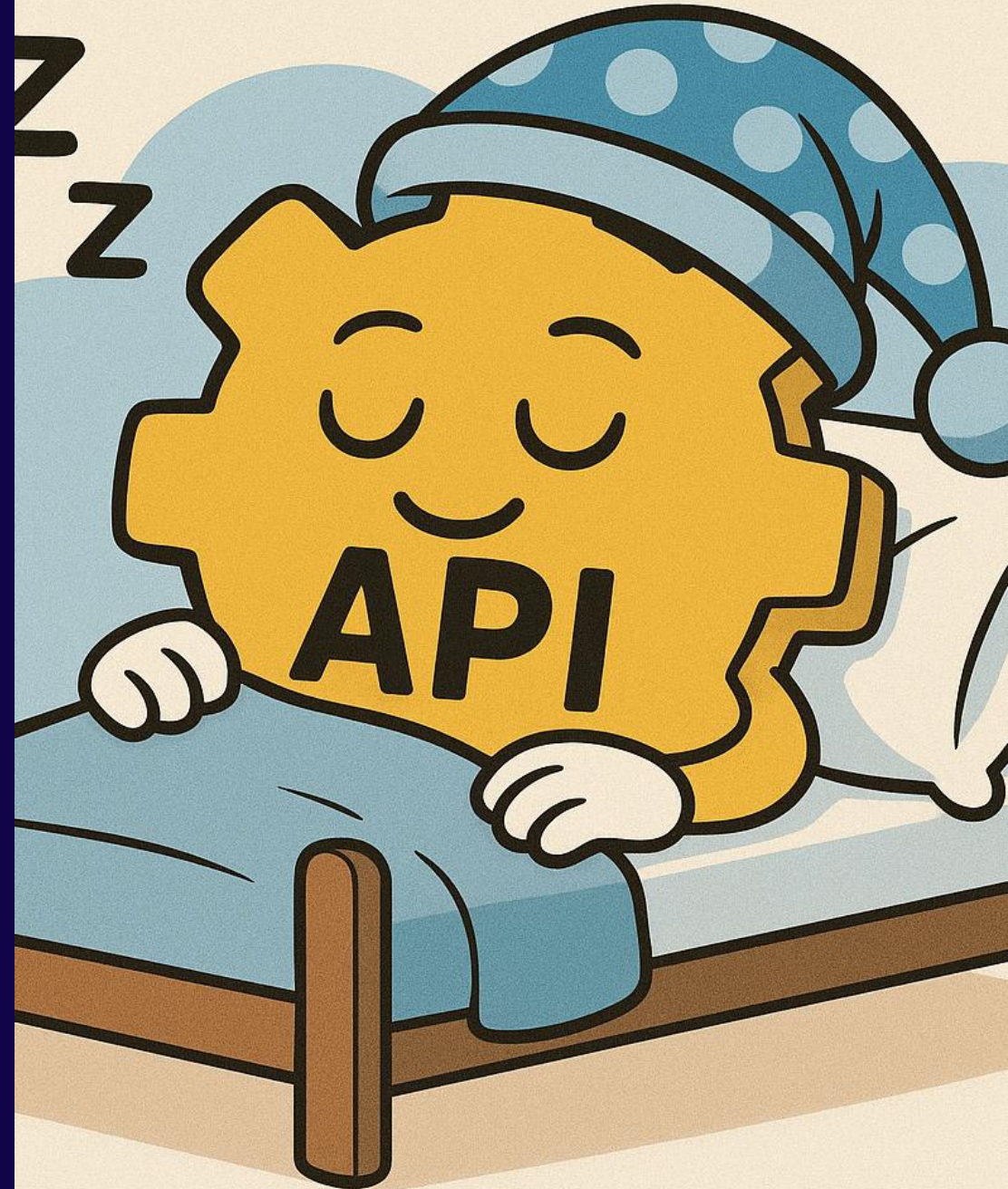




# What AI Things Can I Do With T-SQL?

- SP\_INVOKE\_EXTERNAL\_REST\_ENDPOINT
- Breaks us out of the Azure AI ecosystem if desired
- Breaks us out of most of this AI silliness if we want!
- Let's see what we can do...

**DEMO TIME**



# Why Else Would I Call APIs in SQL?

- Read the contents of a file from Azure Blob Storage
- Send a message to an Azure Event Hub\*
- Read (and write) a file to Azure File Storage
- Other ideas?

# Enough Code, Time for Clicky Clicky

- What if I just want users to be able to talk to my Azure SQL Database?
- What if my developers just want to interact with my database using a chat interface?
- What if I just want to play a little bit?
- Off we go...

**DEMO TIME**





# So What's Next for SQL and Azure AI?

- MCP Server for SQL Server
  - Open standard designed to allow AI agents to talk to external resources
  - More information and quick start on resources slide
- Fabric Data Agents
  - Natural language instructions, prompts, and conversation with all Fabric data EXCEPT SQL in Fabric
  - New at FabCon Vienna, it CAN connect to mirrored databases in Fabric

# What's Next for Us?

- Is this a lot? Yes!
- GitHub AI samples from Microsoft are a great way to see what they're thinking
  - Link on Resources slide
- Do I have to know and keep up with all this stuff?
  - It depends...



# Resources

- Azure SQL Devs' Corner:  
<https://devblogs.microsoft.com/azure-sql/>
- Native Vector Type/Functions GA Announcement:  
<https://devblogs.microsoft.com/azure-sql/announcing-general-availability-of-native-vector-type-functions-in-azure-sql/>
- Great podcast explainer around DiskANN indexing:  
<https://www.youtube.com/watch?v=0KWFgKPXdu0>
- 5-Minute RAG SQL Accelerator:  
<https://github.com/Azure-Samples/azure-sql-db-vector-search/tree/main/5-Min-RAG-SQL-Accelerator>

# Resources (continued)

- Introducing MSSQL MCP Server (preview): <https://devblogs.microsoft.com/azure-sql/introducing-mssql-mcp-server/>
- Microsoft repo of Azure AI/Azure SQL samples: <https://github.com/Azure-Samples/SQL-AI-samples>
- (Mostly) T-SQL Chatbot sample: <https://github.com/Azure-Samples/azure-sql-db-chatbot>
- Walkthrough of Fabric Data Agents and their agentic integrations: <https://medium.com/@meetalpa/microsoft-fabric-data-agent-complete-guide-e6c157fd4a48>

# Thank you

See you next year!

**Matt Gordon**

 **@sqlatspeed**

 **matt.gordon@appsassociates.com**

 **<https://sqlatspeed.com/>**