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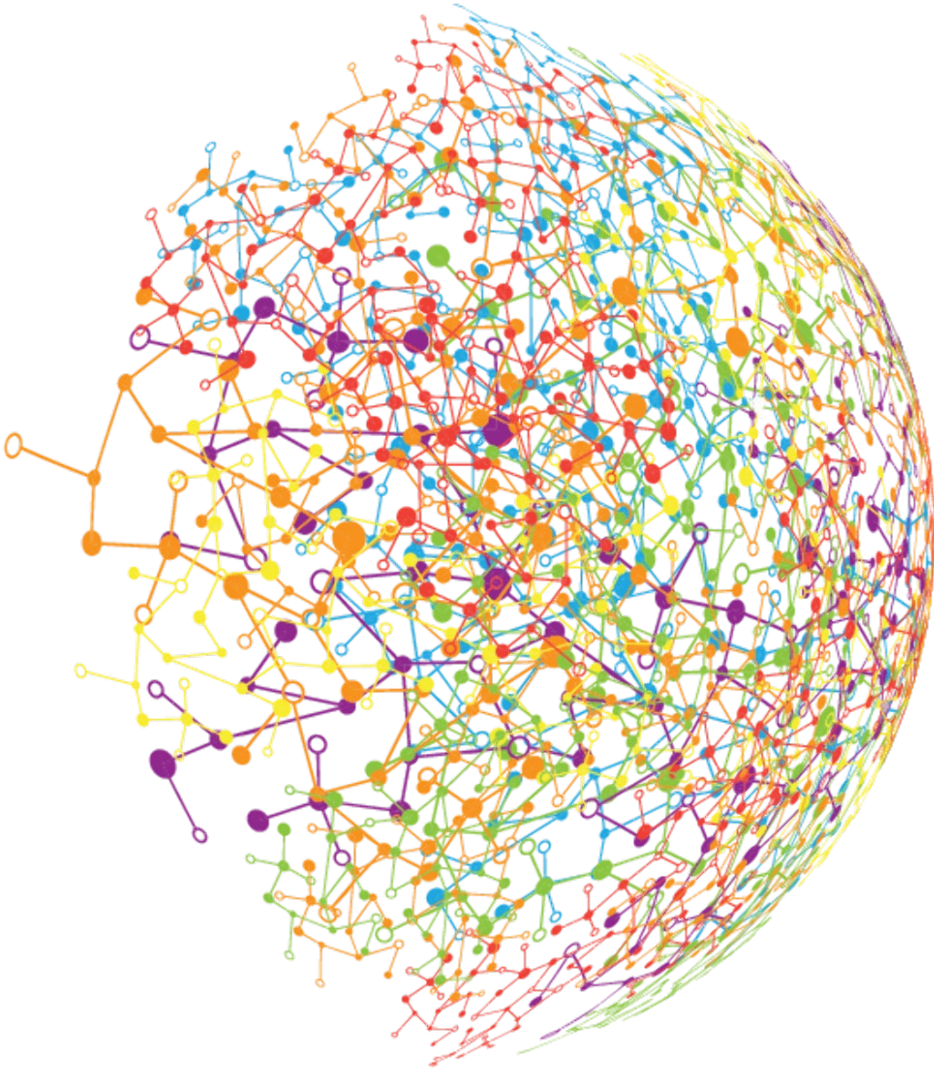

OCTOBER 25, 2023

Connecticut AI Task Force

AI and GenAI Use Cases in State Government

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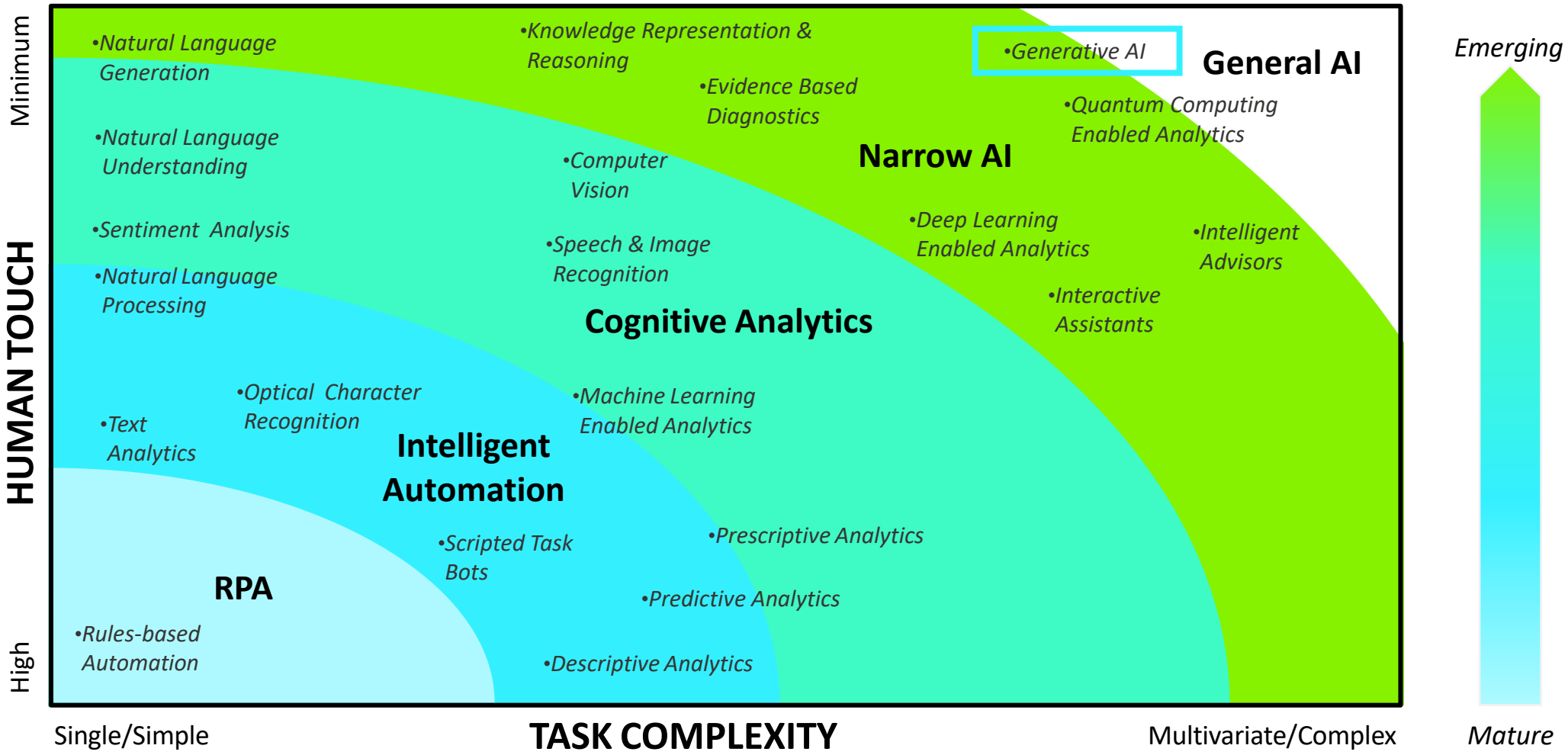
Agenda

- Understanding AI & GenAI
- Overview of AI Solution Areas
- Use Cases for State Government
- Questions & Answers

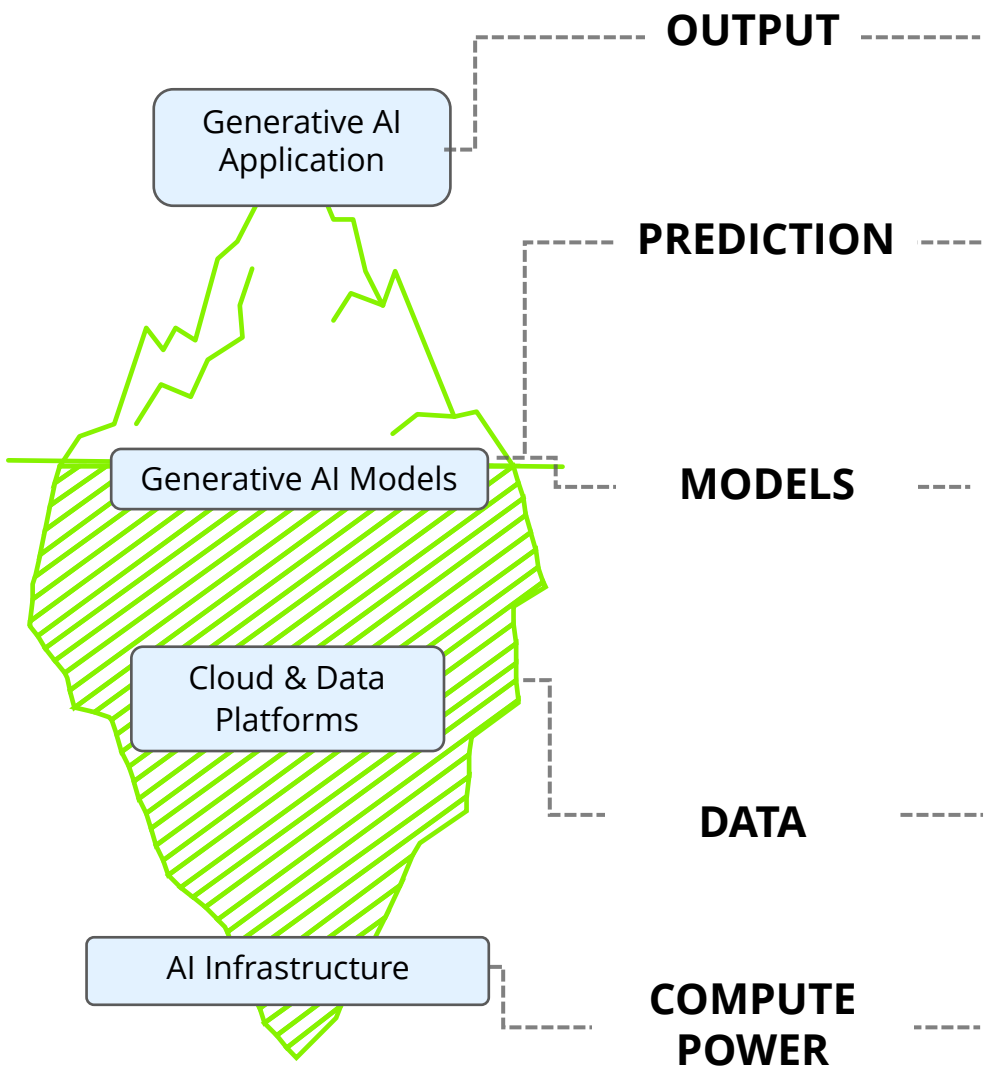
Understanding AI & GenAI

The Artificial Intelligence (AI) Spectrum

AI encompasses a wide range of technologies that use inputs of varying complexities to generate human-like outcomes.



Mechanisms of GenAI



Applications…what we see

Generative AI applications generate content across various modalities (e.g., text, image, video, audio) based on how the underlying model was trained.

Why do these applications seem so human?

Like traditional AI, Foundation Models are models (1) that predict outputs based on inferences on the inputs it receives. However, through, fine-tuning (2), prompt engineering (3) and adversarial training (4) these models generate outputs based on its understanding of human communication.

What are Foundation Models?

OpenAI's GPT-4, and NVIDIA's Megatron are two examples of Foundation Models, specifically large language models (LLM) which use deep learning to process huge amounts of data to form 'memories' on the input datasets through tokenization (5), thereby shaping the models' parameters (6). There are common Foundation Model architectures (e.g., Transformer (7), Diffusion (8)) which drive the modalities for each model.

Training on the world's knowledge

Foundation Models are trained on petabytes worth of global data to shape understanding, tone, and behavior while considering human communication styles.

Powering our journey to tomorrow

The scale of compute capacity required to train and process Foundation Models necessitates the usage of leading GPUs (e.g., A100 NVIDIA) and TPUs (e.g., Google TPU v4) on scalable infrastructure.

What is Generative AI?

A type of artificial intelligence that creates original content across various modalities (e.g., text, images, audio, code, voice, video) that would have previously taken human skill and expertise to create.

HOW does it work?

Uses **Foundation Models (FMs)** trained on massive amounts of data to **understand human communication and natural language.**

WHY now?

Converging innovations of hardware, cloud native stack, software engineering, machine learning, deep learning, and model sizes allows for the **realization of an autonomous creation economy.**

WHO is involved?

Technology leaders and start-ups are developing user facing applications on these underlying models.

- *Act as a **force multiplier** for our people and our clients*
- ***Reduce the burden** of human interaction for many types of tasks*
- *Use technologies to **guide decisions** and **focus on critical tasks***

EXAMPLE MODALITIES

Text Generation

Prompt: *Explain my colleagues the business impact of generative AI in 50 words*

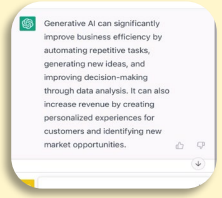
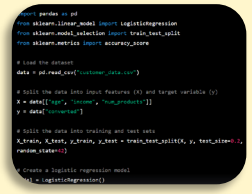


Image Generation

Prompt: *A bowl of soup that is a portal to another dimension as digital art*

Code Generation

Prompt: *In python, code a program that predicts the likelihood of customer conversion*

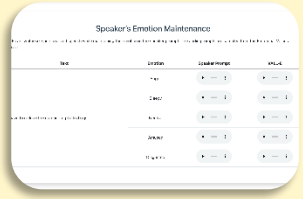


Video Generation

Prompt: *A teddy bear painting a portrait*

Audio Generation

Prompt: *Play 'we have to reduce the number of plastic bags' in a sleepy tone*



Overview of AI Solution Areas

AI Intelligent Solution Areas

DOCUMENT GENERATION

Application of AI to create documents and reports; saving time, reducing error and bias, and allowing employees to focus on what matters.

CASE MANAGEMENT

Using AI to parse files for actionable details which are then sorted and prioritized for maximum impact. Guidance and Policy suggestions at the point of decision.

KNOWLEDGE MANAGEMENT

Natural language interface that allows users to cluster, search, and filter their data without coding or data science expertise. Includes image and video data sources.

CUSTOMER ENGAGEMENT

Applying AI to enhance citizen and customer engagement, ultimately making services more user friendly, and resources easier to navigate and consume.

BACK-OFFICE FUNCTIONS

Application of AI Engine modules and processes that augment the workforce to complete previously tedious back-office functions related to decisions, costs, finance, HR and procurement & logistics.

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AI Opportunities & Impact

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Bringing AI to Life through Real World Applications

*AI drives benefits **across the state government ecosystem**. Below are a few common user personas across state government organizations.*

Health & Human Services

Julia (Resident)

- Feels extremely stuck and overwhelmed
- She lost her job last week and is the primary provider for her family
- She has a fifteen-year-old granddaughter and a twelve-year-old grandson she cares for
- She has heard of food stamps, but she has no idea even where to start

Workforce Development

Robert (Workforce Supervisor)

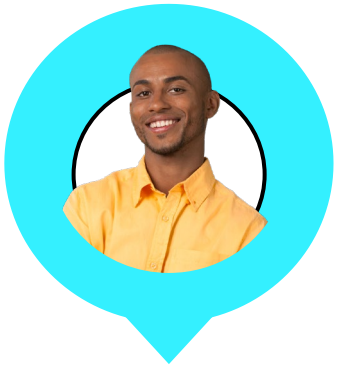
- Never feels his work is done
- Feels unorganized with the endless influx of applications, tasks and cases
- Extremely frustrated with trying to learn new policies and regs
- Communication with clients continues to be challenging

Higher Education

Janelle (Student)

- First in her family to attend college, managed her FAFSA independently
- She struggled to juggle numerous grants and loan applications
- Extremely frustrated by the need to visit multiple offices for financial assessments and scholarship applications
- Constantly anxious about the impending debt burden

Transportation



Anthony (IT Operations)

- Data wiz and has been writing reports and queries for the entire transportation department
- Concerned that when he gets promoted no one will be able to understand their data
- Data quality and data management continue to be ongoing challenges
- Interested in AI but not sure where to start

Tax/Revenue

Emily (Audit Supervisor)

- Tax analyst that worked her way up to audit supervisor
- Agency tax revenues are down, and she is concerned that their team is missing the right cases to audit
- Agency has access to large quantity of data but has historically had challenges with data management
- Has heard about AI but unsure of how it's different from GenAI and how this technology could be used

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Making an Impact in Health and Human Services

Julia (Resident)

- Feels extremely stuck and overwhelmed
- She lost her job last week and is the primary provider for her family
- She has a fifteen-year-old granddaughter and a twelve-year-old grandson she cares for
- She has heard of food stamps, but has no idea where to start

How Does AI Help?

- Julia learns that she's not only eligible (potentially) for SNAP, but she should also apply for Medicaid, TANF, LIHEAP, and HAF
- She fills out a simple application to officially apply for all the above benefits
- She's received a tailored text message letting her know the status of her application
- Benefits are approved and received within a few days helping to alleviate her concern
- Julia is notified of employment and training services

Considerations for AI Success

- Assess and establish standards for safeguarding PII data
- Prompt engineering/testing to improve accuracy, reliability, and bias reduction
- Establishing guardrails to connect residents with the appropriate resources and services
- Alignment of eligibility rules and criteria based on recommended program (Medicaid, SNAP, TANF)

Use Cases

Resource Engine: Connects clients to resources and discovery services available

Navigator Assistant: Enables clients with question-answering capability against websites and State data

AI-Assisted Omni-Channel: Provides text, email, and online notices and alerts

Customer Experience Engine: Develops custom checklists that help customers maintain their benefits

Translation Engine: Provides multi-language text generation support for translating notices

Policy Knowledge Engine: Assists caseworkers, business analysts, and executives answer complex policy questions

Making an Impact in Workforce Development

Robert
(Workforce Supervisor)

- Never feels his work is done
- Feels unorganized with the endless influx of applications, tasks and cases
- Extremely frustrated with trying to learn new policies and regs
- Robert's staff finds communication with clients to be challenging due to language barriers

How Does AI Help?

- Robert uses the new Policy engine tool to research if refugees who are new residents of his state are eligible for workforce support
- Robert's staff can now access all their tasks and cases in a single integrated workload dashboard
- He's able to improve case coordination for staff to ensure their caseloads are manageable
- The new multilingual translation services helps his staff communicate with multilingual jobseekers

Considerations for AI Success

- Review existing policy documentation to confirm accuracy/ reliability
- Establish data transparency to clearly identify the reference/ source documentation for the policy answer
- Separate LLM security protocols are required for policy data (public) vs. case copilot data (private PII)
- Implement continuous monitoring processes to track, train, and tune the workforce solutions
- Test translation services using prompt validation or Human in the Loop AI testing

Use Cases

Case Copilot: Assists workers by interpreting policy or system questions

Mock Interview Engine: offers industry-specific questions and facilitates a training exercise simulating a live job interview

Workload Dashboard: Provides tasks and caseload information summarized in a single view

Self Service Engine: Provides personalized guidance by using information from existing policy/procedure documents

Policy Engine: Interprets policy, systems, and ops manuals to answer worker questions

Service Desk Assistant Engine: Answers FAQs related to tickets, resolving help desk issues, and summarizing help desk calls.

Making an Impact in Higher Education

Janelle (Student)

- First in her family to attend college, managed her FAFSA independently
- She struggled to juggle numerous grants and loan applications
- Extremely frustrated by the need to visit multiple offices for financial assessments and scholarship applications
- Constantly anxious about the impending debt

How Does AI Help?

- Janelle uses the new scholarship matchmaker to identify new scholarship opportunities applicable to her
- Tuition Payment Simulation allows Janelle to estimate her tuition costs compared to other universities
- The student job connector relives some of the debt stress from Janelle, allowing her to find on/off-campus jobs to begin paying for college

Considerations for AI Success

- Identify and investigate potential AI-induced hallucination risks
- Promote and ensure ethical use of AI technologies in decision-making processes
- Enhance measures for maintaining confidentiality and privacy in AI-driven systems when dealing with FAFSA related data
- Prompt engineering/testing to improve accuracy, reliability, and bias reduction

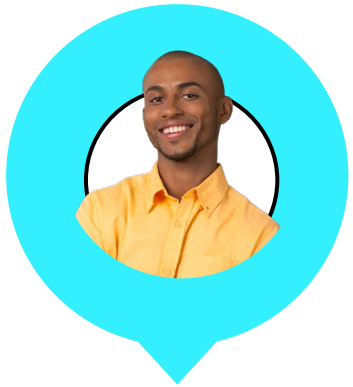
Use Cases

Scholarship Matchmaker: AI-powered scholarship platform that matches student profiles to scholarship opportunities

Tuition Payment Simulation: Simulates tuition payment options to showcase options for students to fund their education and decide between various institutions, and options for schools to receive tuition money promptly.

Student Job Connector: Leverage AI to help students identify and match with various on-campus and off-campus jobs and paid opportunities.

Making an Impact in Transportation



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- Data quality and data management continue to be ongoing challenges
- Interested in AI but not sure where to start

How Does AI Help?

- Anthony uses our Discover AI solution to quickly generate SQL based on text
- The Report Generation and Data Summarizer tools enable him to analyze and build reports on unstructured and semi structured data
- He can document and create a repository of common queries with the AI Catalogue
- Anthony can automatically obfuscate/ mask data in lower environments and create synthetic data for testing with Nudge Engine
- He attends an in-person technical GenAI training – specifically how to use Open AI within Azure

Considerations for AI Success

- Design and implement a secure architecture for AI systems to mitigate vulnerabilities
- Assess and establish standards for safeguarding sensitive data
- Address bias in AI algorithms to ensure fairness and equity
- Establishing guardrails to detect and prevent malicious activities in AI systems

Use Cases

Discover.AI: Assists technical staff in generating SQL queries/ syntax based on English language questions

Nudge Engine: Identifies actions within a system and nudges user to perform actions accordingly

Report Generation: Automatically generates reports and dashboards based on data

Data Summarizer: Brings together large data sets/documents and summarizes key information

AI Catalog: Provides the ability to catalog and store both queries and models in single platform

Contact Center Agent: Uses natural language processing to answer policy and case questions.

Making an Impact in Tax / Revenue Services

Emily
(Audit Supervisor)

- Tax analyst that worked her way up to audit supervisor
- Concerned that her team is missing the right cases to audit
- Agency has had challenges with data management
- Has heard about AI but unsure of how it's different from GenAI and how this technology could be used

How Does AI Help?

- The Intelligent Case Management supports Emily and her staff with creating a prioritized list of tax files that should be audited based on the actionable details that are identified
- When taxpayers receive correspondence indicating that they have been selected for a tax audit, the Intelligent Audit Engagement virtual support chatbot identifies what information and documents are being requested
- Emily uses the Intelligent Back Office to improve workload management and ensure staff are focused on complex audit cases and providing audit support to ensure taxpayer compliance

Considerations for AI Success

- Assess and establish standards for safeguarding PII data
- Prompt engineering/testing to improve accuracy, reliability, and bias reduction
- Continuously update and improve the machine learning models to adapt to changing tax laws, regulations, and patterns

Use Cases

Intelligent Case Management: Use GenAI to parse tax case files to identify actionable details such as excessive deductions, unreported income, excessive expenses, and missing income, which are then sorted and prioritized to identify the most likely cases that should be audited

Intelligent Audit Engagement: Frontline virtual support chatbot that helps taxpayers who have been selected for an audit understand the scope of the audit, what information and documents are being requested, and what information and documentation should be included in the audit response

Intelligent Back Office: Use GenAI to augment the workforce to complete previously tedious back-office functions related to decisions, HR, procurement, and logistics to allow for staff to focus time and attention on audit support to ensure taxpayer compliance

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Bringing AI to Life through Real World Applications

*AI and GenAI are helping to **reimagine and enhance** the **experience** for customers, staff and supervisors, students, and technology staff.*

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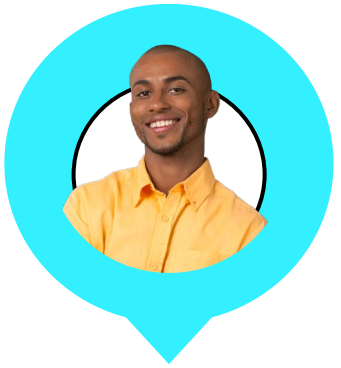

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Q&A

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