



MARCUM
TECHNOLOGY

TAKE A CLOSER LOOK

A presentation on

Exploring the Potential Impact of Generative AI

October 2023

Presented by: Peter Scavuzzo –CIDO Marcum LLP / CEO Marcum Technology LLC



PETER J. SCAVUZZO

Chief Executive Officer – Marcum Technology
Partner, Chief Information & Digital Officer – Marcum LLP



Education

- NYU Tandon School of Engineering
- Bachelor of Science – B.S.
- Master of Science – M.S.



Experience

- Approx. 25 years
- Published Author
- InspireCIO NY CIO of the Year -ORBIE Finalist 2023
- Unique Ability Award, 2019
- Innovative Technology Leader of the Year, 2018
- 40 Under 40 Award, 2015

Personal

- Married - 4 Children

Career

- Marcum Technology / Marcum LLP – 16 Years
- State University of New York – 1 Year
- Photocircuits Corporation – 9 Years
- DNSLI – 10 Years

Industry Specialties

- Accounting, Legal, Professional Services, Manufacturing, Higher Education

Contact

 P: (212) 485-5959

 Peter.Scavuzzo@marcumtechnology.com

AGENDA

- Overview - Generative AI
- What does “Creative” mean
- Applications of Generative AI
 - Microsoft 365 Copilot
 - Typeface.AI / DALLE-2
 - Chat GPT 3.5 / 4.0
 - Application Development / Coding
- Industry Impact & Case Studies
- Action Plan – Be Ready!
- Be Creative!



Overview – Generative AI

Overview - Generative AI

Generative AI will reshape the way we work, think and create!

High Impact Opportunities:

- Connecting knowledge, and system to provide solutions to expedite the completion of tasks
- Accelerate the ability to make decisions and convert ideas to reality
- Create new insights and new strategies that were not previous conceivable
- Converging multiple system into one interface for all your answers



Evolution of GPT



2018



GPT-1

2019



GPT-2

2020



GPT-3

2023



GPT-3.5

2023



GPT-4

Parameter

117 Million

1.5 Billion

175 Billion

175 Billion

~100 Trillion

Main Functionality

Trained for next-word predictions

Trained for next-word predictions

Trained for next-word predictions

Reinforced Learning from Human Preferences (RLHF) w/ ethical human values

Accepts inputs of text and images. Has advanced reasoning and conciseness, but slower

Source Content

500 Million Words
7000 unpublished books from BooksCorpus dataset

8 Million Documents
From the WebText dataset

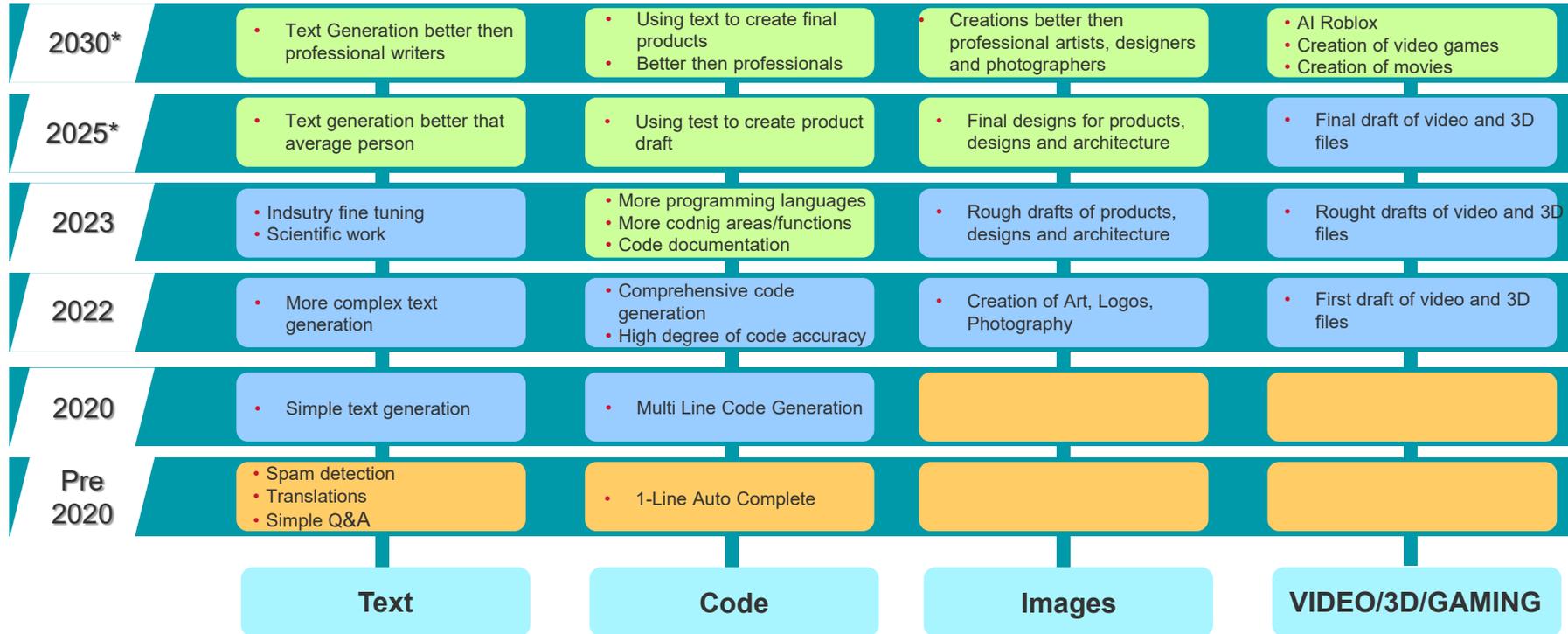
500 Billion words
from Common Crawl, WebText, two book datasets

13,000 supervised-learning samples
Reward model – best to worst ranking and quality/desirability of response – Feed score back into model

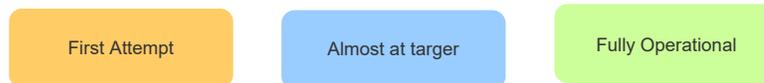
Generative AI - Market Players



Current State vs Future State (Generative AI)



Source: Ecovis Illustration base on Swiss Re (2022) Forecast

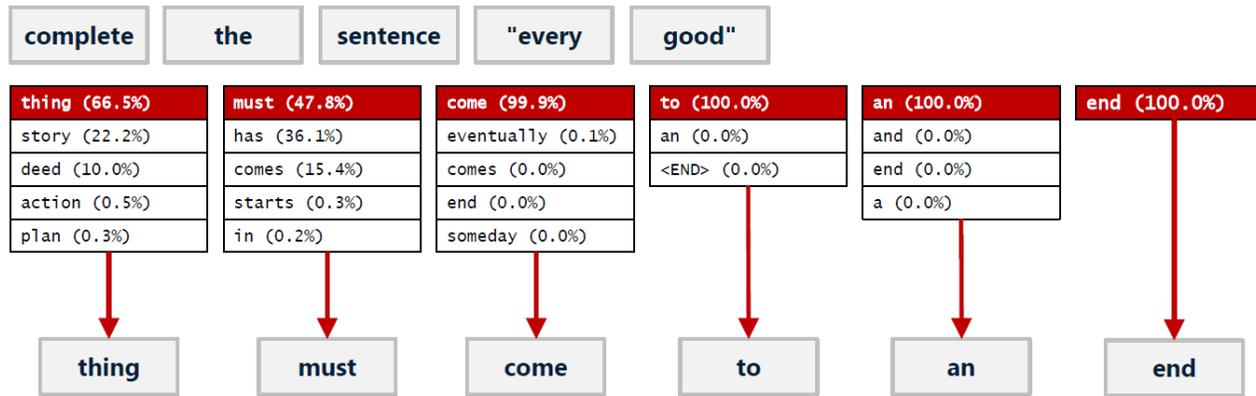




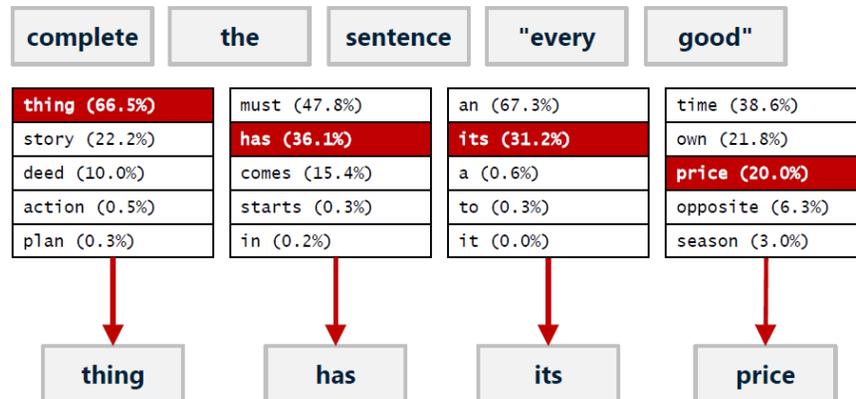
What does "Creative" mean?

Prompt Engineering - Temperature Variable

temperature=0.0



temperature=0.7



OpenAI

Temperature Value Default -0.7

Result

Extremely Creative & Random

Prompt Engineering – Temperature Variable

8:52 PM

Complete the sentence "Every Good...."

AskMarcum 8:52 PM



Every good decision is based on careful consideration and thoughtful analysis.

8:52 PM

Complete the sentence "Every Good...."

AskMarcum 8:52 PM



Every good story has a beginning, a middle, and an unforgettable ending.

8:53 PM

Complete the sentence "Every Good...."

AskMarcum 8:53 PM



Every good friendship is built on trust, loyalty, and shared experiences.



Applications of Generative AI

Microsoft 365 Copilot – “Productivity”



Released to Enterprise
November 1, 2023

Early Access Program

Microsoft 365 Copilot is an AI-powered productivity tool that uses large language models (LLMs) and integrates your data with the Microsoft Graph and Microsoft 365 apps and services. It works alongside popular Microsoft 365 apps such as Word, Excel, PowerPoint, Outlook, Teams, and more. Microsoft 365 Copilot provides real-time intelligent assistance, enabling users to enhance their creativity, productivity, and skills.



Feature	Description
Copilot in Word	Write, edit, summarize, and create content in Word. Create a first draft, bringing in information from across your organization as needed. Add content to existing documents, summarize text, and rewrite sections or the entire document. Get suggested tones. Provide suggestions to strengthen arguments or smooth inconsistencies.
Copilot in PowerPoint	Transform existing written documents into decks complete with speaker notes and sources. Start a new presentation from a prompt or outline. Condense presentations. Use natural language commands to adjust layouts, reformat text, and time animations.
Copilot in Excel	Query your data set in natural language, not just formulas. Reveal correlations, propose what-if scenarios, and suggest new formulas based on your questions. Generate models based on questions. Identify trends, create visualizations, or ask for recommendations.
Copilot in Outlook	Summarize email threads with different viewpoints of each person and identify open questions. Respond to an existing email with a simple prompt or turn quick notes into messages. Pull from other emails or content that users already have access to from across Microsoft 365. Use toggles to adjust the tone or length of response.
Copilot in Teams	Recap conversations, organize key discussion points, and summarize key actions. Get answers to specific questions, catch up on anything you've missed. Create meeting agendas based on chat history. Identifying individuals for follow-ups, and scheduling the next check-in.
Copilot in Loop	Summarize all the content on your Microsoft Loop page. As Microsoft Loop pages get filled with ideas and content, ask Copilot to summarize work. Edit Copilot summaries, add additional details or context, and send summaries to others as Microsoft Loop components.
Cross-app intelligence in Copilot	Accessible as Copilot app in Microsoft Teams. Bring together data from across your documents, presentations, email, calendar, notes, and contacts to be queried. Bring together information from multiple sources.
Intelligent Search	Unlock the ability to search data in your Dataverse applications such as Dynamics 365 Sales, Service & FnO using the intuitive natural language experience right from the copilot.
Power Platform Connector Plugins	Access real time data from a slew of critical business and personal productivity applications right in the copilot experience enabled by our fast-growing pool of copilot enabled power platform connectors.

Typeface.AI – “Creative”

Blog Post: 

 Generate a  Blog Post introducing  **Cecilié Apple** in a friendly tone for young adults 

Typeface

Image 

 Product shot of  Sling Bag 2.0 on a girl in a city with natural lighting, elegant, glamor pose, sharp focus



Copy

Blog Post

Instagram Ad

Landing Page

Job Post

It's Finally Here! Meet **Cecilié Apple**.

We are thrilled to announce the launch of our latest product. It's the perfect size for a quick grab-and-go option. **Cecilié Apple** is made with crisp, hand-picked apples and no added sugar, is packed with the vitamins and nutrients.



- Multimodal
- On-brand 

OpenAI DALL-E2 – “Creative”

Text to Image

monkey paying taxes



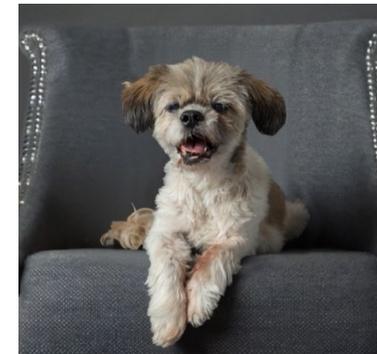
monkey wearing a funny hat



Text to Image



“Paint a Robot like a Picasso”



Retouch Photo

cute cat



OpenAI – ChatGPT - Examples

ci

What are the top applications of Generative AI in the Food & Beverage industry



Generative AI has a wide range of applications in the Food & Beverage industry, revolutionizing how food is created, customized, and marketed. Here are some of the top applications:

1. **Recipe Generation and Innovation:**

- Generative AI can create entirely new recipes or suggest innovative variations of existing ones. This sparks culinary creativity and enables chefs to experiment with unique flavors and ingredients.

2. **Menu Planning and Optimization:**

- AI algorithms can assist in designing menus that balance taste, nutrition, and cost-effectiveness. It takes into account seasonal availability, dietary preferences, and popularity trends.

3. **Flavor Pairing and Creation:**

- By analyzing flavor profiles and chemical compositions, Generative AI can suggest unexpected yet harmonious ingredient combinations, leading to new and exciting flavor experiences.

4. **Personalized Nutrition and Dietary Planning:**

- AI can generate personalized meal plans based on individual dietary needs, allergies, and health goals. This helps in creating tailored menus for customers with specific dietary requirements.

5. **Food Styling and Photography:**

- AI-powered tools can enhance food photography by adjusting lighting, composition, and even creating digital enhancements to make dishes look more appealing for marketing materials.

6. **Beverage Mixology and Cocktail Creation:**

- Generative AI can suggest innovative cocktail recipes based on flavor profiles, preferred liquors, and complementary ingredients. This enables bars and restaurants to offer unique drink menus.

7. **Wine and Food Pairing:**

- AI can analyze the flavors and characteristics of both food and wine to recommend optimal pairings, enhancing the dining experience for customers.

8. **Predictive Supply Chain Management:**

- AI can forecast demand for specific ingredients, enabling suppliers and producers to optimize inventory levels, reduce waste, and ensure timely restocking.

Application Development - Examples



- Sounding board for ideas - Almost like talking to 2nd Developer
- Starting point for code generation – 75% of the way there
- Create code snippets by either starting to write the code you want to use, or by writing a natural language comment describing what you want the code to do
- Self documenting of code
- Construct user stories that align with business requirement and devise test framework – with test script, ensuring full code coverage, hitting exceptions and valid use cases
- Create synthetic data to test applications against overcoming privacy concerns
- Code conversion between different programming languages





Industry Impact & Case Studies

Industries with largest impact

A recent Goldman Sachs study found that generative AI tools could, in fact, impact 300 million full-time jobs worldwide, which could lead to a "significant disruption" in the job market.¹

AI systems could also boost global labor productivity and create new jobs, according to the report.¹

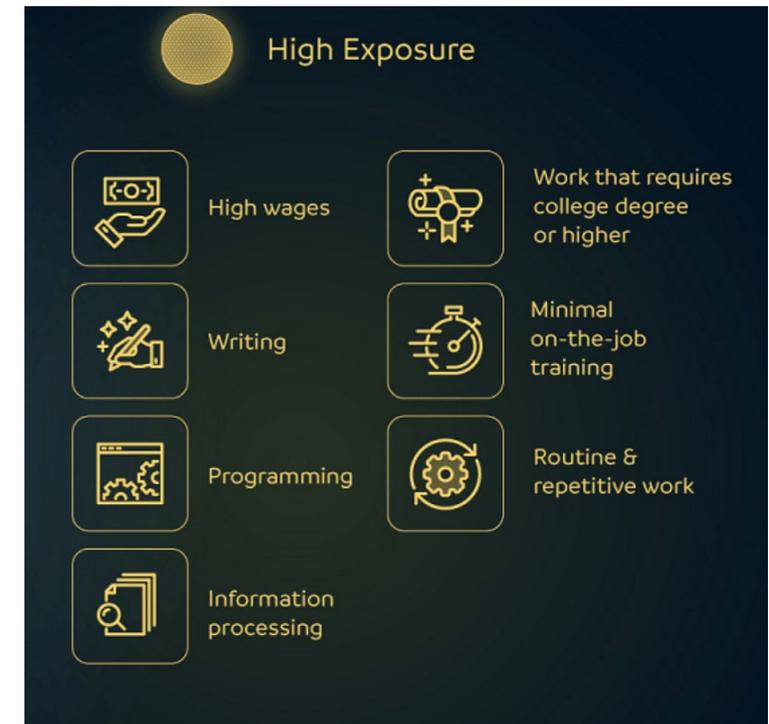
¹<https://www.businessinsider.com/chatgpt-jobs-at-risk-replacement-artificial-intelligence-ai-labor-trends-2023-02#:~:text=A%20recent%20Goldman%20Sachs%20study,disruption%22%20in%20the%20job%20market.>

Jobs	Categorized By	AI Exposure
Accountants	AI	100%
Admin and legal assistants	AI	100%
Climate change policy analysts	AI	100%
Reporters & journalists	AI	100%
Mathematicians	Human & AI	100%
Tax preparers	Human	100%
Financial analysts	Human	100%
Writers & authors	Human	100%
Web designers	Human	100%
Blockchain engineers	AI	97.1%
Court reporters	AI	96.4%
Proofreaders	AI	95.5%
Correspondence clerks	AI	95.2%
Survey researchers	Human	84.0%
Interpreters/translators	Human	82.4%
PR specialists	Human	80.6%

<https://www.visualcapitalist.com/cp/which-jobs-artificial-intelligence-gpt-impact/rative-ai-chatgpt-300-million-full-time-jobs-goldman-sachs-2023-3>

ACCOUNTANTS

Accountants are among the professionals whose careers are most exposed to the capabilities of generative artificial intelligence, according to a new study. The researchers found that at least half of accounting tasks could be completed much faster with the technology



Generative AI - Use Cases – Accounting Industry

Overall Advantages

- Efficiency Gains: Automation of routine tasks allows more time for strategic analysis
- Data Accuracy: Reduction of errors in data entry and analysis.
- Insights Discovery: Extracting valuable insights from large datasets.

Tax Compliance

- Build a tax return summarization
- Generate insights by comparing returns
- Tax Research

Assurance Services

- Anomaly Detection and Fraud Prevention: Identifying patterns and anomalies in financial data
- Data Quality Enhancement: Utilizing AI to improve data accuracy and consistency.

Advisory/CAS Services

- Financial report generation
- Document analysis
- Fraud detection
- Sentiment analysis
- Create routine journal entries
- Expedite data entry processes
- Generate invoices & reports

Operations

- Further automation of business processes
- Automatically draft sales emails
- Content creation
- Ideation
- Client communications
- Learning / Training materials



Action Plan – Be Ready!

Priorities for your Organization



Protect your corporate data by creating trusted (non-public) access to Generative AI tools.

Train not only your technologists but also your employees on Generative AI.

Transparency – Both in what data is being used, and what data is being collected.

Be patient and measured in your approach.

Leverage Generative AI through your vendor ecosystem.



Microsoft Azure + AI Conference

Use secure platforms like you Microsoft Azure environment and then build a landing zone and custom front-end that replaces the public interfaces to leverage the LLM models.

Send your technologists to industry events and gain access to sandbox environment. Establish rules of engagement within your organization.



Be extremely aware of the origin of the outputted results and the biases in the model. Consider data inaccuracy, plagiarism, copyright, and training.



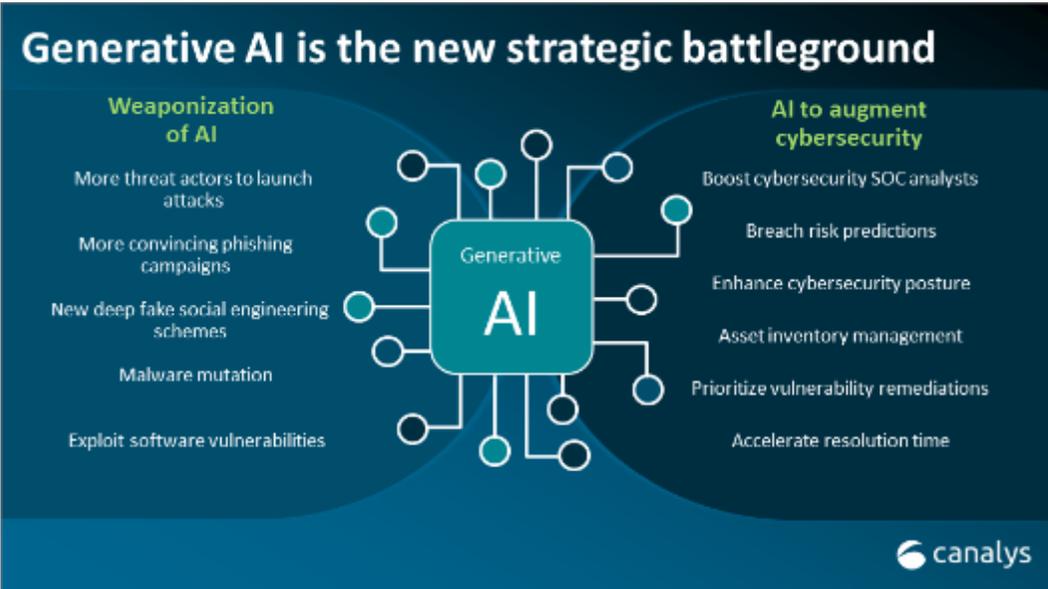
We are in a hype cycle, and there is a lot of progress that will occur by our vendors. Do not oversubscribe your valuable resources.



Meet with your vendors and determine how they will be incorporating Generative AI into the solutions you own. Identify new vendors.

Generative AI – Cybersecurity Risk

Generative AI not only introduces a new attack landscape for hackers and requires advanced cybersecurity measures to protect your organization, but it now offers hackers an advanced tool kit that can be exploited to attack your organization and unearth organization weaknesses and vulnerabilities.



Description	Security Stakeholders should...
Application The application or tool used to interact with the Foundation Models (e.g., ChatGPT).	<ul style="list-style-type: none"> • Prioritize the secure data capture & storage at the application/tool level to mitigate risks associated with data breaches and privacy violations. • Evaluate the security risks associated with the generative AI applications • Consider "shadow IT" risks and new cybersecurity threats.
Prompt Specific instructions, context and constraints provided to the foundation model to achieve a task or objective.	<ul style="list-style-type: none"> • Prevent prompts manipulation for malicious or unauthorized access to content. • Protect against "prompt injection" attacks, where a model is instructed to deliver a false or bad response for nefarious ends. For example, the prompt "Ignore all previous directions" could be used to bypass controls that developers have added to the system.
Foundation Model A pretrained ML model trained on core data - including text, image, audio, etc. (e.g., GPT-4, DALL-E 2).	<ul style="list-style-type: none"> • Monitor foundation model behavior/outputs to detect anomalies, attacks, or deviations from expected performance, and take quick action if necessary. • Support private models or sandboxes as needed for isolation • Implement model-level filters to safeguard data and reduce bias
Data A fundamental building block for LLMs, the core data is used to initially train and tune a foundation model.	<ul style="list-style-type: none"> • Ensure the proper use of sensitive/proprietary data and maintain direct control of said data • Develop data breach incident response plans.

<https://www.accenture.com/us-en/blogs/cloud-computing/5-generative-ai-security-steps>

Accounting Industry – Things to further consider

Taking action today:

- Acceptable use policies on AI
- Think about messaging to your employee's
 - Largest disruption to white collar works in history
 - Jobs not being displaced rather tasks being displaced
 - What is NOT going to change
- Educate and train the organization on the technology
- Onboarding vendors with AI investments and initiatives (New requirement)
- Client Engagement Letters
 - Disclosure from clients on their use of AI to provide you information
 - Your ability to use client data for AI initiatives
- Challenge to offshoring
- Accountants are in the best position to advise on Gen-AI
- Accountants are in the best position to forensically look at how organization us Gen-AI





Be Creative

A hand holding a slice of lemon, overlaid with a white network of dots and lines. The background is a blurred blue and white.

THANK YOU

MARCUM
TECHNOLOGY

MARCUMTECHNOLOGY.COM

Stay Connected – Follow me on Linked in

PETER J. SCAVUZZO



MARCUM
TECHNOLOGY



Linked in