

# Strategic AI Empowerment

Session for the Board Excellence

April 22, 2024

North Carolina PMI

For Registered Participants only. Not for Distribution



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## About Me


- Work
- Certifications & Education
- Speaking Engagements
- Volunteer


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## Agenda

- AI Fundamentals
- Prompting Skills
- Hands-on Exercises
- Ethics, Risk, Governance, Security
- Foundational Principles for AI Governance
- Review and Recap
- Adjourn



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## Ice Breaker



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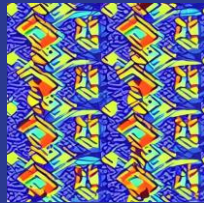
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## Patterns



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### Learning from Patterns



**1st**

Mechanisation,  
Steam and  
Water Power



**2nd**

Mass  
production,  
Assembly lines,  
electricity



**3rd**

Computer &  
Automation



**4th**

Cyber Physical  
Systems,  
networks, AI



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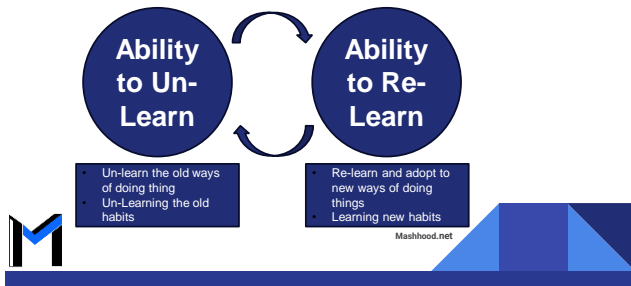
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## Most Important Skillset



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## Research Findings



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## Harvard Business Review

**AI Won't Replace Professionals**  
**— But Professionals With AI Will**  
**Replace Professionals Without**  
**AI**



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## What is AI? and Impact on Business



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## What is Artificial Intelligence?

The ability for computers to perform tasks normally requiring human intelligence or to imitate intelligent human behavior – such as

- Problem solving,
- Learning and reasoning,
- Visual Perception,
- Voice Recognition,
- Data Analysis, Pattern Analysis and more



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## AI Layers

- Artificial Intelligence

### Artificial Intelligence

A broad area of computer science aimed at creating systems capable of performing tasks that typically require human intelligence. These tasks include decision-making, visual perception, speech recognition, and translation between languages.



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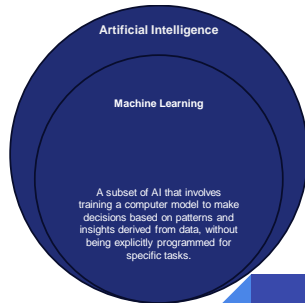
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## AI Layers

- Artificial Intelligence
- Machine Learning



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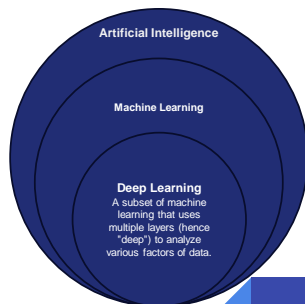
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## AI Layers

- Artificial Intelligence
- Machine Learning
- Deep Learning



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## Impact of AI on business

- **Automation:** AI automates repetitive tasks, increasing efficiency and reducing costs.
- **Data Analytics:** AI can analyze vast datasets, offering valuable insights for informed decision-making.
- **Personalization:** AI powers personalized customer experiences, enhancing engagement and loyalty.
- **Predictive Maintenance:** AI predicts equipment failures, minimizing downtime and maintenance costs.
- **Process Optimization:** AI optimizes workflows, streamlining operations for better productivity.

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## AI Capabilities

## AI Categories

## AI Models



### Levels of AI Capabilities

#### Artificial Narrow Intelligence (ANI)

- AKA Weak AI
- Specific tasks
- Smart Speaker, self driving cars

#### Artificial General Intelligence (AGI)

- AKA Strong AI
- Ability to think
- On Par with human capabilities

#### Artificial Super Intelligence (ASI)

- Holy Grail
- Hypothetical, movies and fictions
- Surpasses human capabilities



### AI Categories

#### Generative AI

- Generating contents
- Generating Image
- Generating context

#### Specialize AI

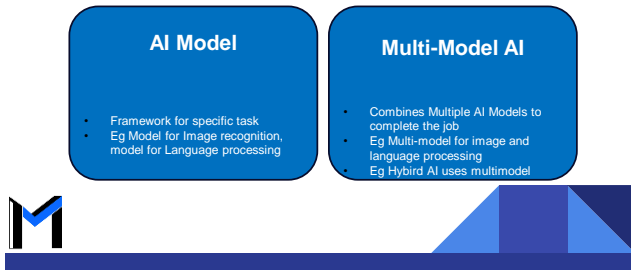
- Narrow AI
- Specific problem
- Medical diagnosis

#### Hybrid

- Combines both for special use cases



## AI Models




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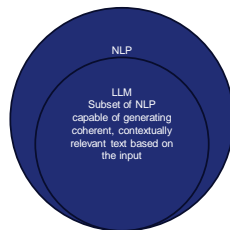
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## NLP and LLM

- NLP – Natural Language Processing
- LLM – Large Language Model




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## AI Terminologies

- NLP – Multiple aspects of interaction between computers and human
- LLM – tool within NLP to process and generate human language
- Gen AI – tool that can generate content similar to human – text, images, videos etc.
- Generative Pre-trained Transformer
- Deep fake




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## Technology Trends



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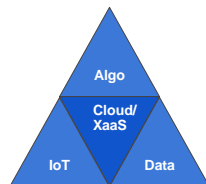
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## Technology Convergence

- Algorithms
- Cloud/XaaS
- Internet of things
- Data (Structured or Unstructured)



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## Paradigm Shift

- Keyboard to input data
- Desktops to Mobile Phones
- GUI to voice enabled systems
- Now moving into ...



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## Future Trends

- **Augmented Reality (AR):** Augmented Reality is an interactive experience that overlays computer-generated content onto the real-world environment, enhancing and augmenting the user's perception
- **Virtual Reality (VR):** Virtual Reality is a simulated, immersive environment that completely replaces the real-world surroundings, typically experienced through a head-mounted display and sometimes other sensory inputs.
- **Spatial Computing** - Enables collaborative work environment from remote locations




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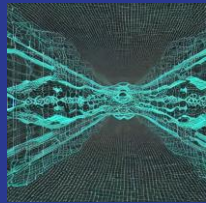
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## Gen AI Tools




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## Gen AI Tools available

<https://gemini.google.com/>

<https://chat.openai.com/>

<https://claude.ai/>

<https://ai.meta.com/>

<https://copilot.microsoft.com>

<https://grok.x.ai/>



Meta AI




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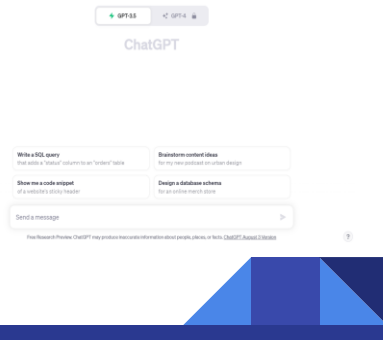
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## ChatGPT

- Web interface
  - 3.5 Free
  - 4.0 PAID
- API Interface
- Custom GPTs
- Enterprise ChatGPT




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## Token Limit

- What is Token Limit?
- Chat GPT 3.5 4096
- ChatGPT 4.0 8000




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## AI Prompting Skills




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## What is Prompting?

- Prompting is emerging skillset required use Generative AI Models.
- Prompting is a process of creating a set of prompts, or questions, that are used to guide the user toward a desired outcome.
- Prompts involve instructions and context passed to a language model to achieve a desired task.
- Prompting is the practice of developing and optimizing prompts to efficiently use large language models (LLMs) for a variety of applications.
- Prompting is a useful skill for required to learn today to prepare for AI Revolution.




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## Prompt Categories

- Text Summarization
- Information Extraction
- Text Classification
- Conversational Chatbot -Brainstorming and dialogue
- Simulation (what if scenarios)
- Code Generation
- Many more in near future




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## Elements of Good Prompt

- **Instruction** - a specific task or instruction you want the model to perform
- **Context** - external information, Persona or additional context that can steer the model to better responses
- **Input Data** - the input or question that we are interested to find a response for
- **Output Indicator** - the type or format of the output
- **Response Tone** – Tone of the response




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Response Tone

- Using tone in AI prompts is crucial for creating a more human-like and engaging interaction
- It helps to engage your audience and enhances user experience
- It provide clarity and set expectations
- Tone also helps to craft culturally sensitive contents with human touch
- It helps to build emotion touch and context



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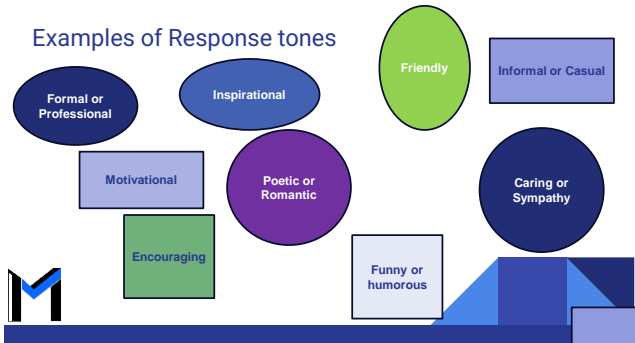
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Examples of Response tones



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Good Practice

- Start Simple
- Instructions
- Specifics
- Avoid Impreciseness/be direct
- To do or not to do?



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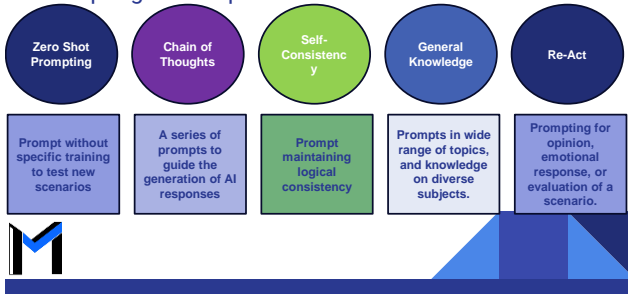
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## Prompting Techniques




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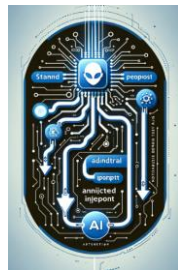
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## Prompt Injection

- **Definition:** Prompt Injection refers to the intentional or unintentional insertion of commands or cues that alter the intended function of an AI model during interaction.
- **Impact on AI:** Can lead to unexpected or undesirable outputs, potentially manipulating the AI to bypass restrictions or produce biased information.
- **Preventive Measures:**
  - Implement input validation to check for malicious patterns.
  - Use context isolation to separate different user sessions.
  - Regularly update AI models to recognize and resist injection attempts.




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## Prompt Leaking

- **Definition:** Prompt Leaking occurs when a model inadvertently reveals information about previous prompts or training data in its responses.
- **Risks:** Compromises privacy and data security, potentially exposing sensitive information.
- **Mitigation Strategies:**
  - Data sanitization to remove sensitive information from training datasets.
  - Differential privacy techniques to obscure individual data points.
  - Regular audits of model outputs to detect and address any leaks.




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## Prompt Drifting

- **Definition:** Prompt Drifting refers to the gradual shift in an AI model's behavior or focus over time due to evolving input patterns or unintended learning from user interactions.
- **Consequences:** Drift can lead to a degradation in the relevancy and accuracy of the AI's responses.
- **Counteractions:**
  - Continual learning protocols to maintain model alignment with its intended purpose.
  - Feedback loops that allow for human correction of AI outputs.
  - Regular model evaluations against a fixed performance benchmark.



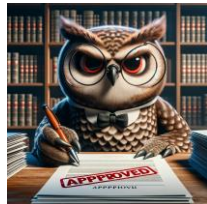
## AI Hallucination

- **Definition:** AI Hallucination describes a scenario where an AI system generates false or distorted outputs that do not accurately reflect the input data or the real world.
- **How It Occurs:** Occurs due to overfitting, biases in the training data, or when AI encounters out-of-distribution data. AI 'fills in the gaps' with fabricated details when unsure about the input.
- **Examples:**
  - Image recognition systems seeing objects that aren't there.
  - Language models creating plausible but incorrect or nonsensical information.
- **Mitigation:**
  - Diverse and comprehensive datasets for training.
  - Regular model validation with human oversight.
  - Implementing robustness checks against out-of-distribution data.
  - Set boundaries and parameters



## STOP

- Do NOT Use any AI model in business without written approval



Build AI Task Force

- Lawyer/Legal Counsel
- Privacy Advocates
- IT Security
- AI experts
- Business area representation.



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Hands on Exercises



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### Custom GPTs

- PMI
- Project Management
- Image generator, Canva
- Writing
- Productivity
- Research and Analysis
- Education
- And many more



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### Role of Human in the age of AI



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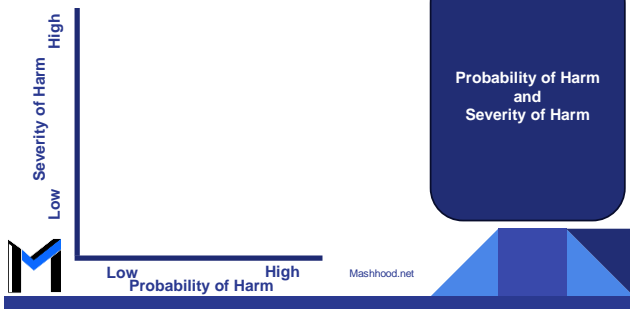
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### Role of Human in the Age of AI



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### Role of Human in the Age of AI




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### Role of Human in the Age of AI




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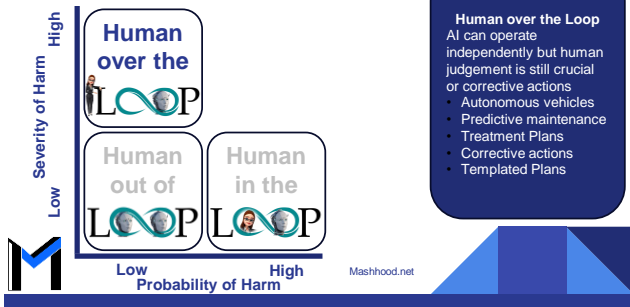
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### Role of Human in the Age of AI




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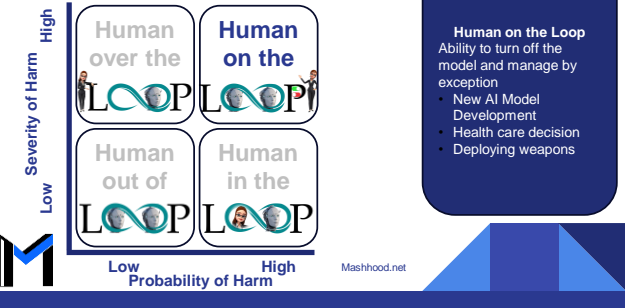
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### Role of Human in the Age of AI




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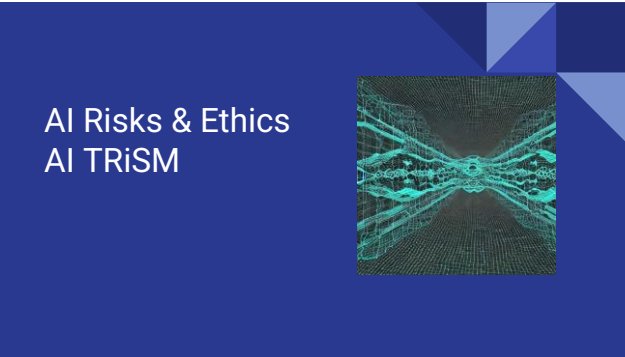
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### AI TRiSM

- Gartner defines AI TRiSM as: a framework that supports AI model governance, trustworthiness, fairness, reliability, robustness, efficacy and data protection.
- Trust
  - Risk
  - Security Management




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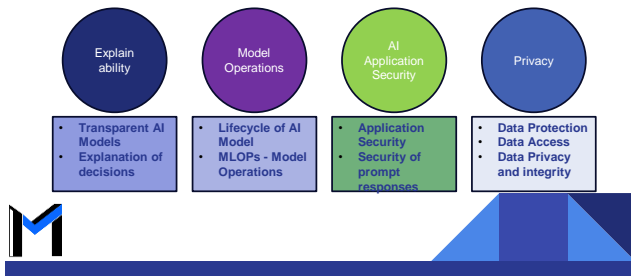
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## AI TRiSM



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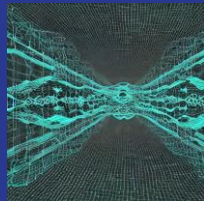
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## AI Risks & Ethics



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## Generative AI Risks and Ethics

<b>Bias and Fairness</b>	<p><b>Risk:</b> Generative AI models can inherit biases present in the training data, leading to biased outputs. This can result in unfair or discriminatory outcomes, impacting certain groups more than others.</p> <p><b>Mitigation:</b></p> <ul style="list-style-type: none"><li>Establish Ethical Guidelines for AI adoption,</li><li>Implement thorough data preprocessing,</li><li>Conduct regular bias and fairness audits,</li><li>Employ fairness-aware algorithms,</li><li>Build continuous improvement capabilities.</li></ul>
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Generative AI Risks and Ethics

Bias and Fairness	<b>Risk:</b> Generative AI may produce data that compromises user privacy, especially if the training data contains sensitive information. <b>Mitigation:</b> <ul style="list-style-type: none"><li>• Conduct Data Classification exercise</li><li>• Implement robust data anonymization techniques</li><li>• Ensure compliance with data protection regulations</li><li>• Adopt privacy-preserving methods in model training.</li></ul>
Data Privacy	



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Generative AI Risks and Ethics

Bias and Fairness	<b>Risk:</b> Generative AI systems may produce unexpected or unintended outcomes, causing harm or disruption in unforeseen ways. <b>Mitigation:</b> <ul style="list-style-type: none"><li>• Train and educate staff on Gen AI risks,</li><li>• Implement continuous monitoring and feedback,</li><li>• Test AI models in diverse scenarios,</li><li>• Be prepared to address unforeseen consequences.</li></ul>
Data Privacy	
Unintended Consequences	



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Generative AI Risks and Ethics

Bias and Fairness	<b>Risk:</b> Determining responsibility for AI-generated outcomes can be challenging, especially when the decision-making process of a generative model is complex and not easily explainable. <b>Mitigation:</b> <ul style="list-style-type: none"><li>• Establish clear accountability frameworks,</li><li>• Document the decision-making process,</li><li>• Adopt AI systems that offers transparency and explain-ability.</li></ul>
Data Privacy	
Unintended Consequences	
Accountability Challenge	



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Generative AI Risks and Ethics

Bias and Fairness	<b>Risk:</b> Excessive reliance on generative AI without human oversight may lead to blindly trusting automated decisions, potentially ignoring critical contextual factors. <b>Mitigation:</b> <ul style="list-style-type: none"><li>• Balance automation with human oversight,</li><li>• Establish clear decision boundaries for AI systems,</li><li>• Educate staff on responsible use of AI technologies.</li></ul>
Data Privacy	
Unintended Consequences	
Accountability Challenge	
Over Reliance	



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Generative AI Risks and Ethics

Bias and Fairness	<b>Risk:</b> Generative AI models can be vulnerable to adversarial attacks, where malicious actors manipulate input data to mislead or compromise the model's performance. <b>Mitigation:</b> <ul style="list-style-type: none"><li>• Incorporate security measures such as robust model validation,</li><li>• Monitor for adversarial activity,</li><li>• Employ techniques like adversarial training.</li></ul>
Data Privacy	
Unintended Consequences	
Accountability Challenge	
Over Reliance	
Security Threats	



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Foundational Principles for AI Governance



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Foundational Principles for AI Governance



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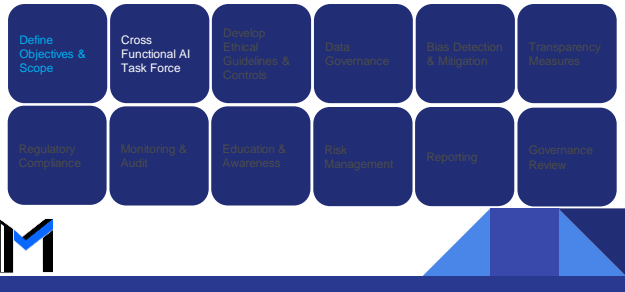
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Foundational Principles for AI Governance



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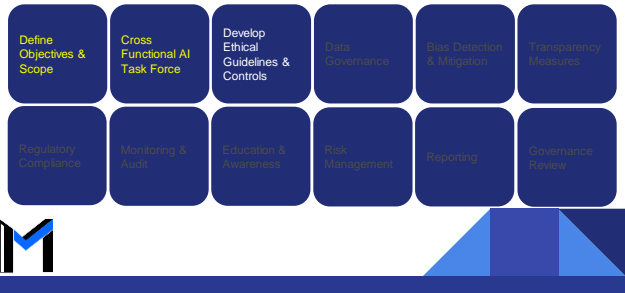
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Foundational Principles for AI Governance



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Foundational Principles for AI Governance



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Foundational Principles for AI Governance



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RECAP



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Keep Exploring

- Setup follow up 1-1 call
- [www.calendly.com/ahmedmashhood](https://www.calendly.com/ahmedmashhood)



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Q&A

[www.linkedin.com/in/mashhood](https://www.linkedin.com/in/mashhood)  
[ahmedmashhood@gmail.com](mailto:ahmedmashhood@gmail.com)





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