

# Demystifying Artificial Intelligence (AI)

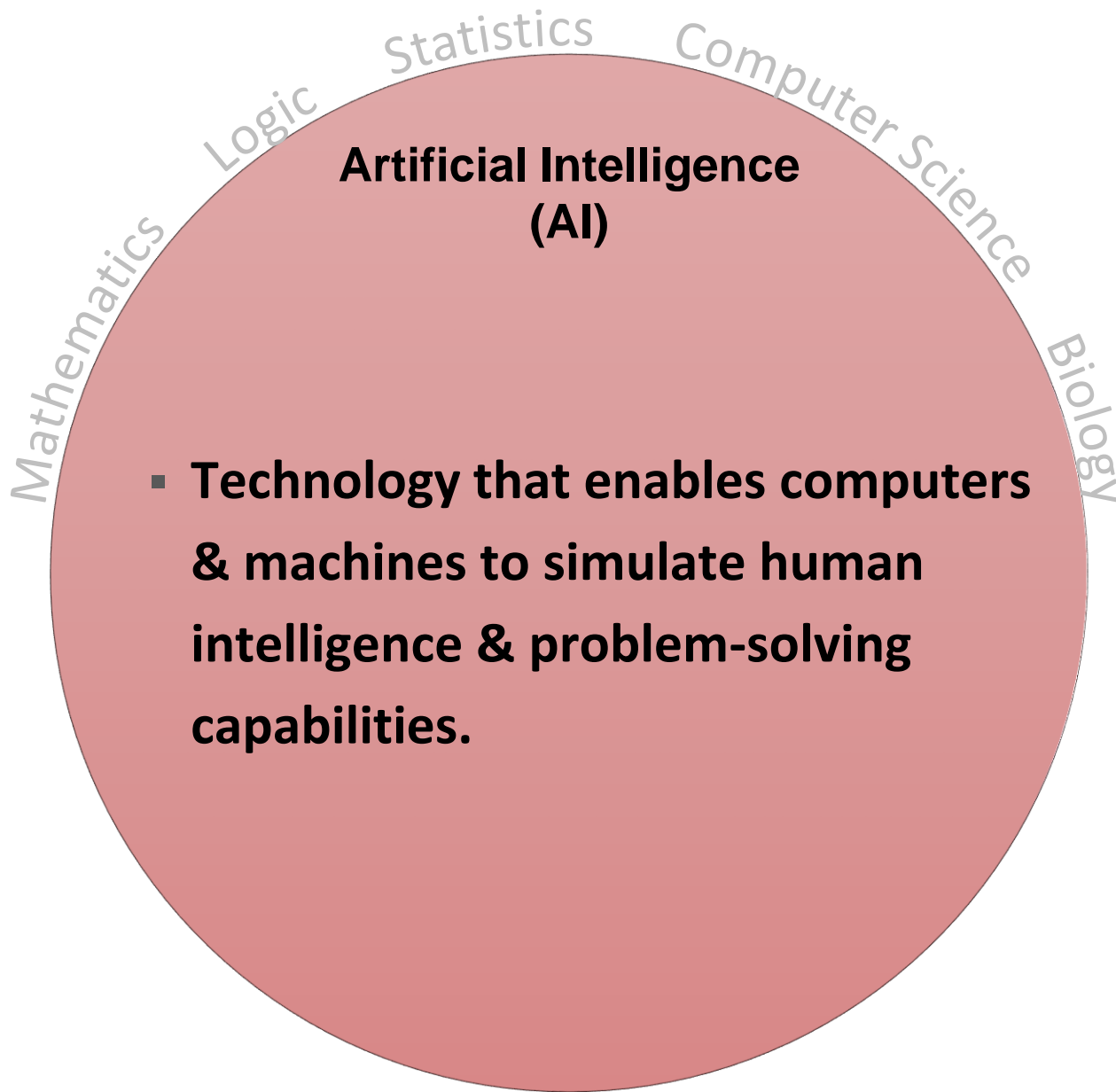


Michael O'Connor  
Senior Technical Leader

Bhavin Desai  
Senior Program Manager

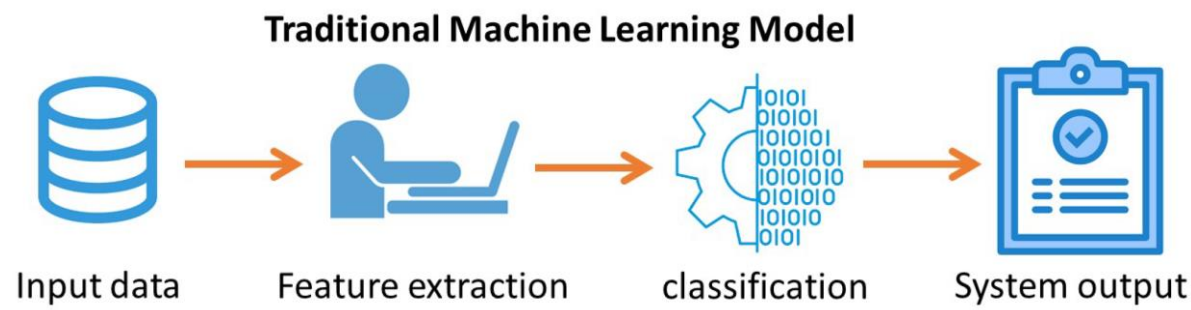
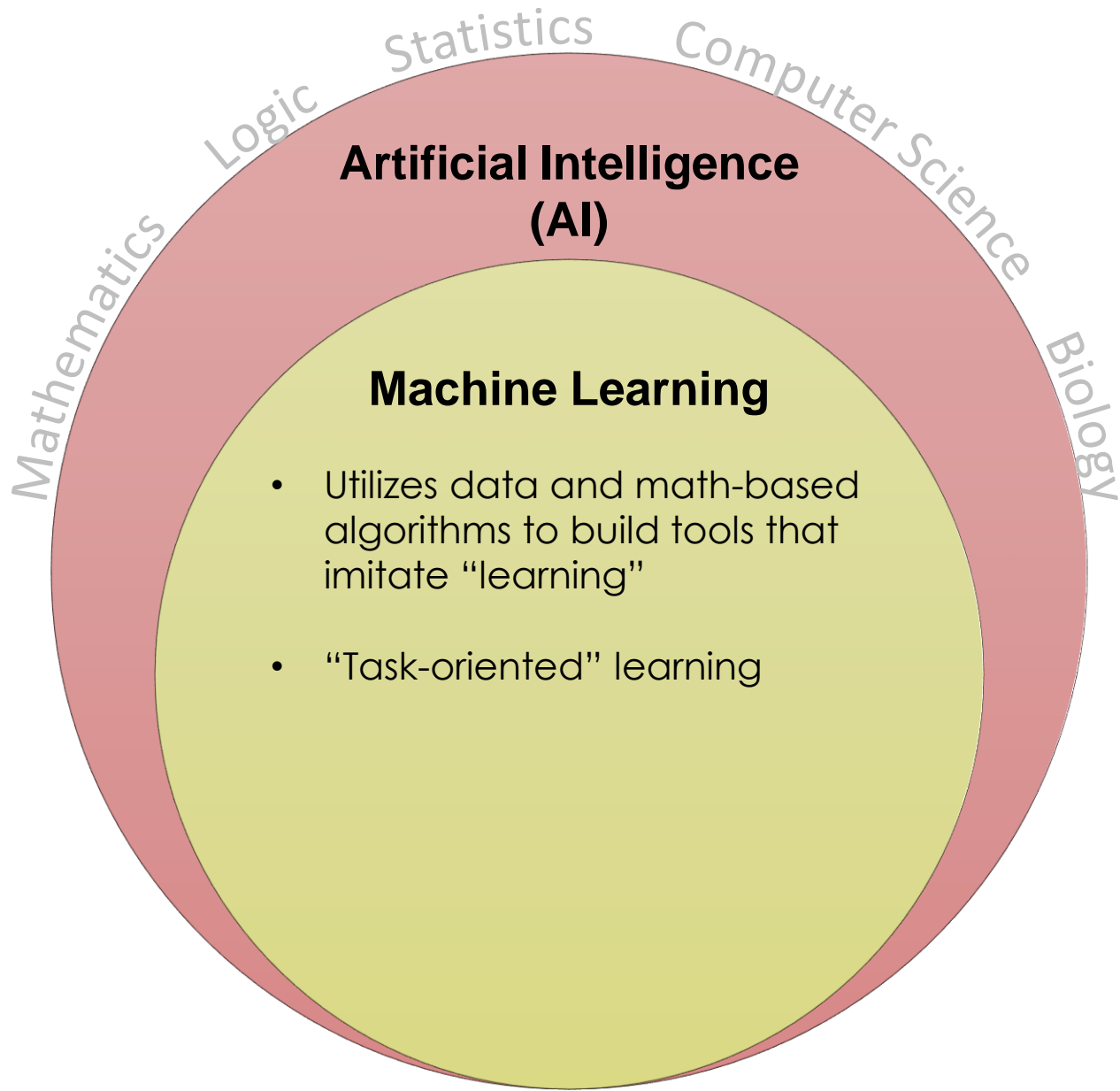
# AI is Like An Onion



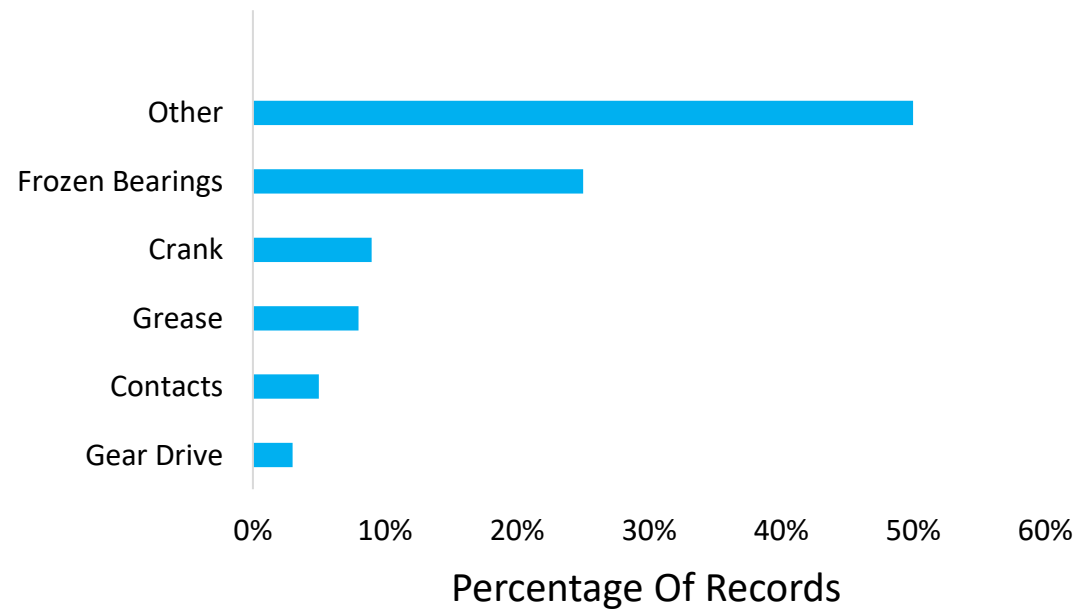


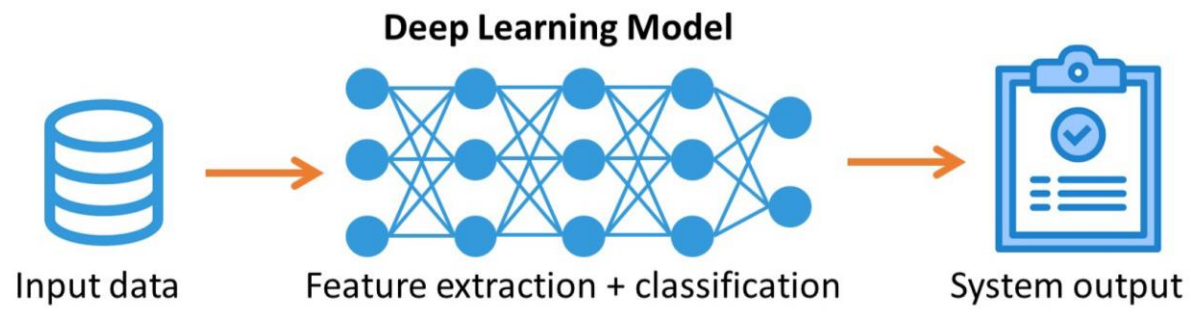
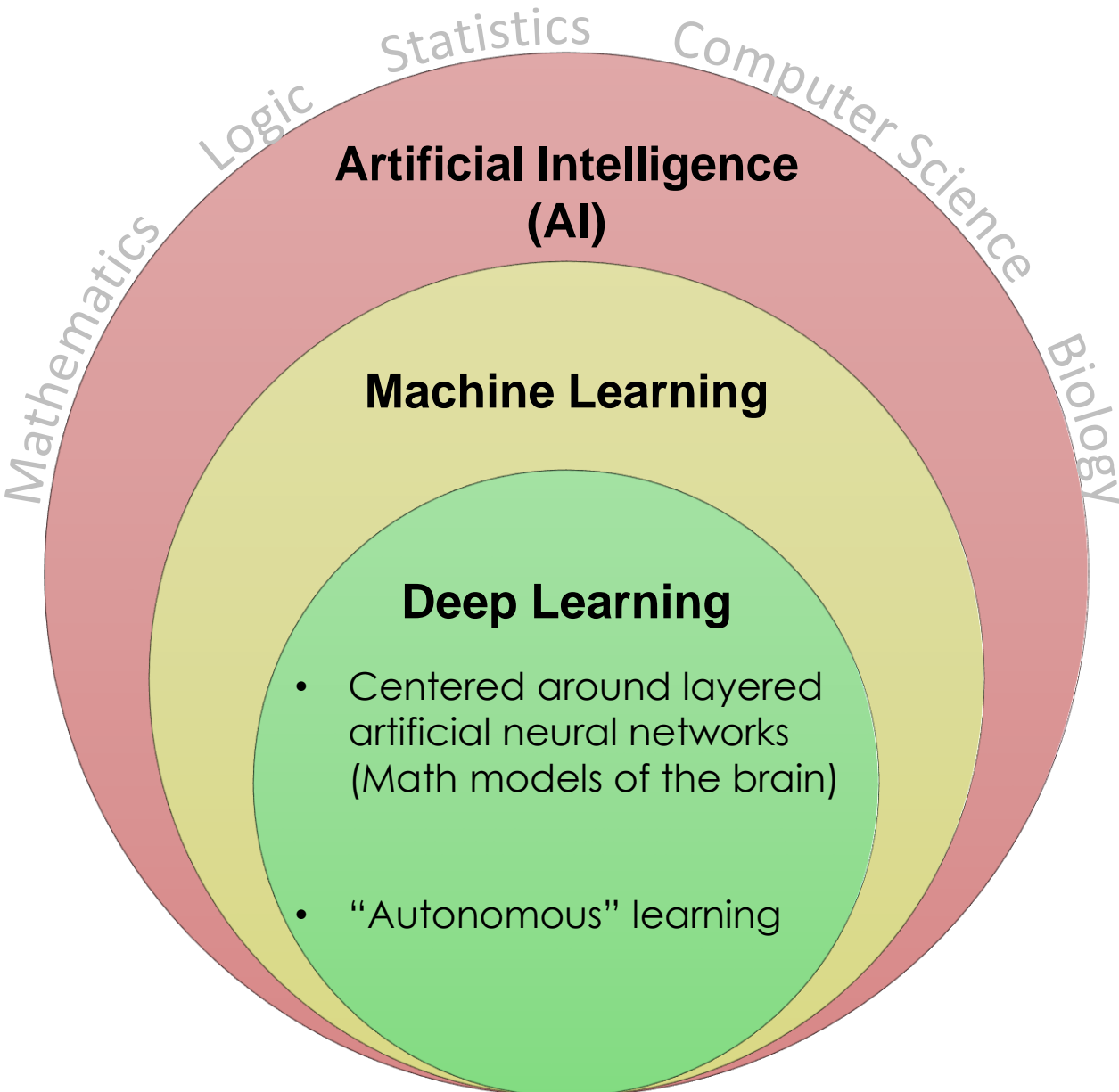
*“the science and engineering of making intelligent machines behave in a clever way”*

*1955, Prof. John McCarthy*

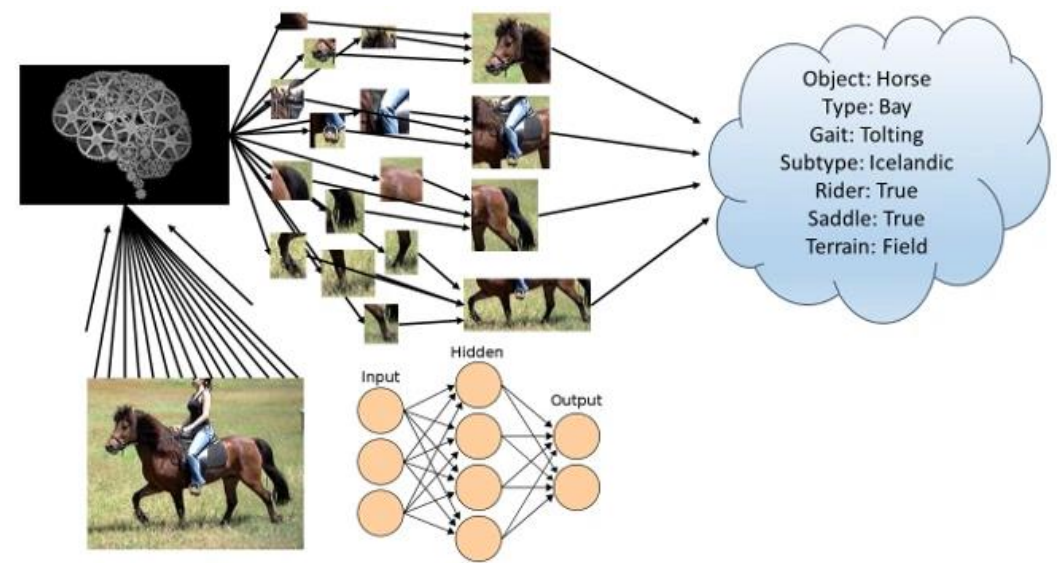


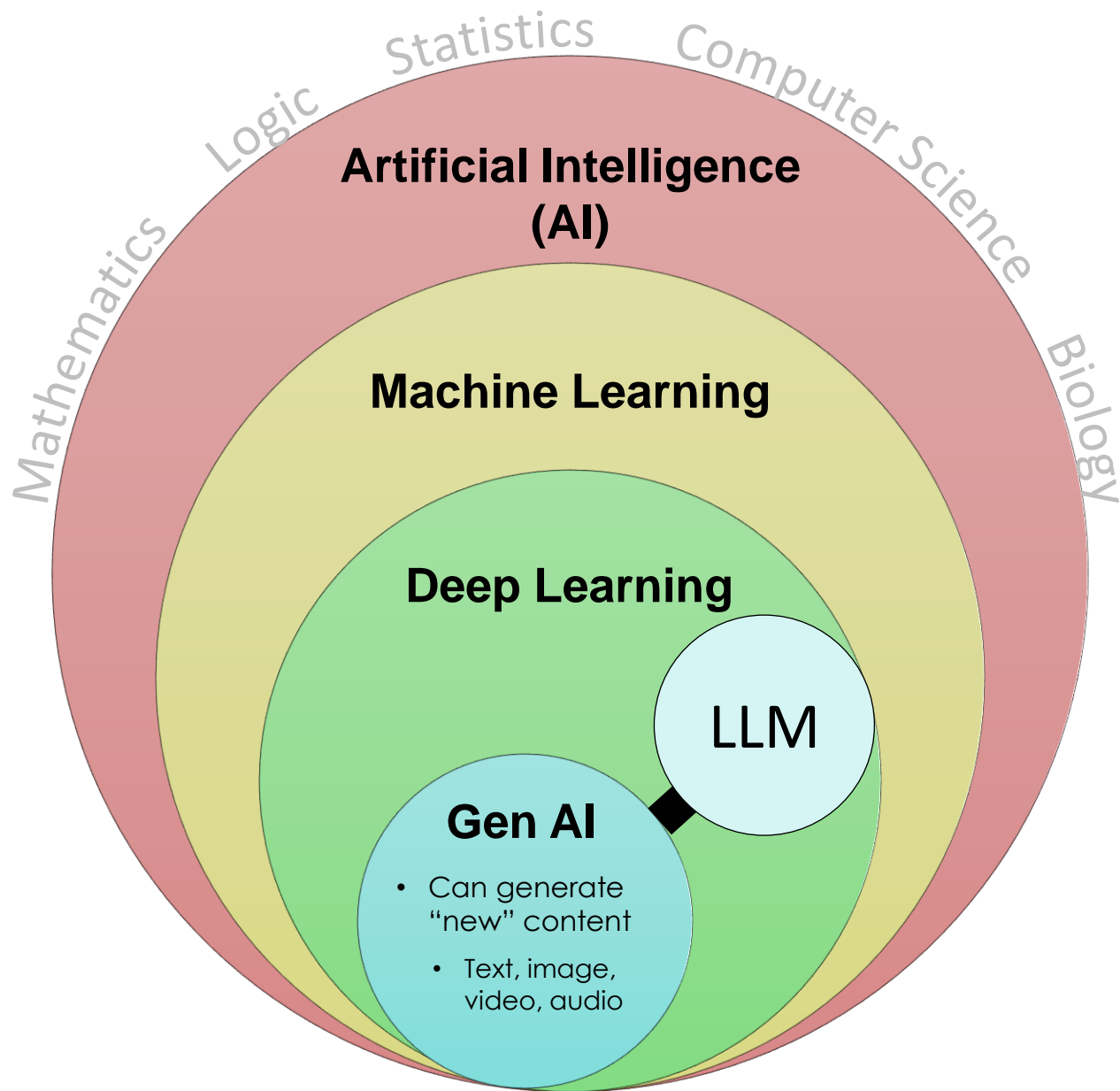
**Categorizing historical disconnect switch maintenance  
1800 records; > 100,000 words**





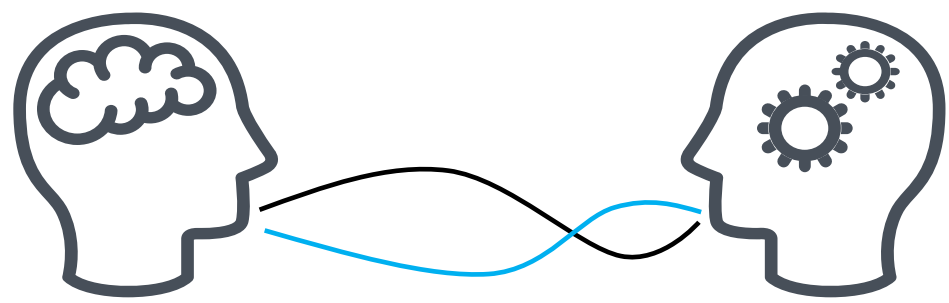
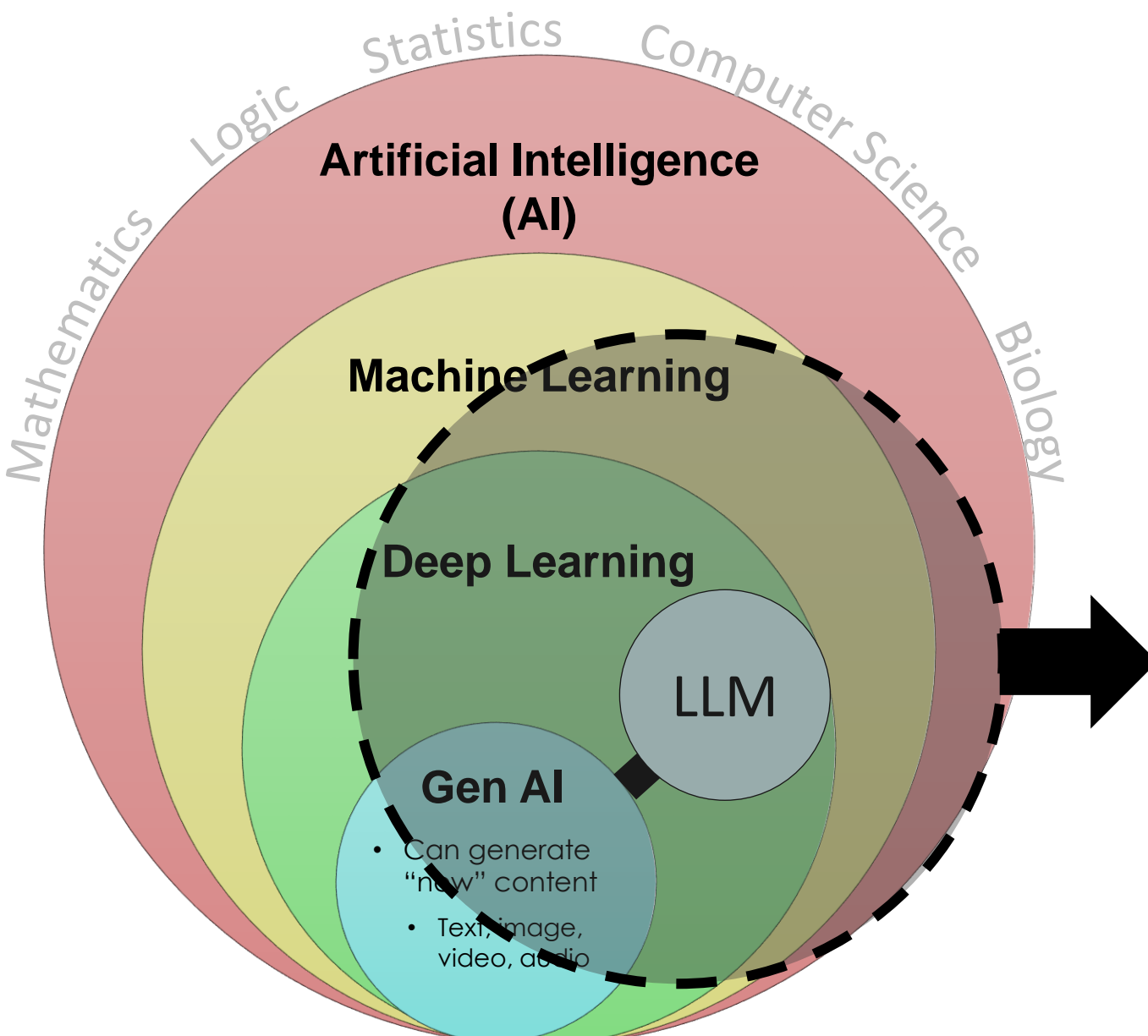
<b>Machine Learning</b>	"Learn" a set of patterns that you tell the algorithm to look for and utilize
<b>Deep Learning</b>	"Finds" the relevant patterns and "learns" from them in a more autonomous fashion





**LLM**: A model of language patterns developed using a specific deep learning architecture and incredibly large amounts of text data

**Note**: Most Generative AI tools have an LLM at their center that serves as a sort of "brain"



**Natural Language Processing**

The application of AI techniques to enable computers to analyze, understand, and make sense of human language.

# AI Challenges

	Machine Learning	Deep Learning	Generative AI
Capabilities	<ul style="list-style-type: none"> <li>Limited to specific, and well-defined tasks                             <ul style="list-style-type: none"> <li>Task-optimized</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Broad range of decision &amp; inferential tasks                             <ul style="list-style-type: none"> <li>Hierarchical/Sequential reasoning</li> <li>Task-optimized</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Can create “new” data                             <ul style="list-style-type: none"> <li>NOT task-optimized</li> </ul> </li> </ul>
Data Needs	<ul style="list-style-type: none"> <li>Megabytes</li> </ul>	<ul style="list-style-type: none"> <li>Gigabytes</li> </ul>	<ul style="list-style-type: none"> <li>Terabytes-Petabytes</li> </ul>
Other Needs		<ul style="list-style-type: none"> <li>Specific hardware to develop, manage, and run models</li> </ul>	<ul style="list-style-type: none"> <li>Specific hardware to tune models, and perform inference</li> </ul>
Transparency	<ul style="list-style-type: none"> <li>Partially</li> </ul>	<ul style="list-style-type: none"> <li>A Black Box</li> </ul>	<ul style="list-style-type: none"> <li>A Black Box</li> </ul>
Development Environment	<ul style="list-style-type: none"> <li>Local, In-House</li> </ul>	<ul style="list-style-type: none"> <li>Local, In-House</li> </ul>	<ul style="list-style-type: none"> <li>Cloud</li> <li>Vendor/Open-Source</li> </ul>
Other Factors			<ul style="list-style-type: none"> <li>Model Management, Tuning</li> <li>User Interaction, Data Security</li> </ul>

**Quality of Results ALWAYS Depends on Model Training Data**



# EPRI Transmission Analytics Program's Role


Identify High-Value Potential Applications



Evaluate Emerging Analytics Tools and Foundational Models



Leverage Collaboration To Aid Assessment of AI Tools



Understand Challenges, Risks, & Concerns



Provide Education & Awareness



**TOGETHER...SHAPING THE FUTURE OF ENERGY®**