Altruistic Intelligence

How AI can empower non-profit missions by transforming productivity

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Agenda

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What is AI?

01

What is AI to you?

1. ChatGPT

2. Killer Robots

3. Magic

4. Useless

5. I don't know, Addie. That's why I'm here

Today's Learning Objectives

- **Understanding of the fundamentals** of Artificial Intelligence, Machine Learning, and Natural Language Processing

- **Learn the impact** of AI and how to be an ethically and responsible user

- **Boost your productivity** and save time with AI

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A Very Brief History of AI

Least Squares Method

The concept for fitting linear equations to data is published. This is the basis for regression and thus predictive and causal analysis

1950

AI Winter

Machine learning methods like Artificial neural networks and backpropagation are discovered but there is pessimism about their effectiveness.

2010's

1805

The Turing Test

This determines if a machine can exhibit intelligent behavior indistinguishable from that of a human.

1970's

Deep Learning

Widespread use of neural networks for prediction, classification tasks, specifically with big advances processing text and images

Definitions

Artificial Intelligence (AI): The capability of computational systems to perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving, perception, and decision-making

Machine Learning (ML): Statistical algorithms that can learn from data and generalize to unseen data, like neural networks

Natural Language Processing (NLP): Computers processing data encoded in natural language

Large Language Model (LLM): Neural network language models with many parameters, and trained with self-supervised learning on a vast amount of text

Generative AI: Large language models trained for generative tasks to produce text, images, videos, or other forms of data
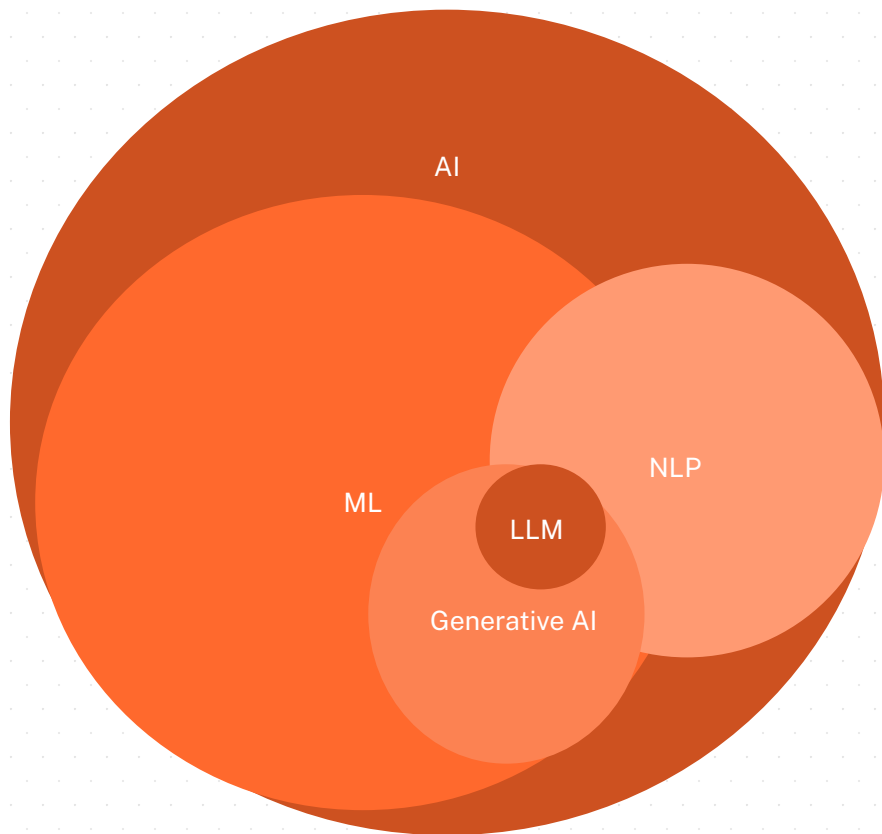
# Breaking down Generative AI

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Machine Learning Basics

- Creates a **generalized representation** of the data it is "trained" on
- Approaches:
  - Supervised: Data is labeled as inputs and outputs, model learns what inputs leads to what outputs
    - Ex: Email spam filter
  - Unsupervised: No labels, the model learns patterns and structure of the data
    - Ex: Customer segmentation
  - Reinforcement Learning: A model that interacts with dynamic inputs to maximize rewards
    - Ex: Chess bot, self driving cat
- Tasks:
  - Prediction: Given past data what is coming in the future?
  - Classification: What category does this data belong to?
  - Recommendation: What new data is most like the data from before?
  - Anomaly detection: What data stands out from other data?

- Good models need the magic recipe of math, big data, powerful computation resources
- **More data = better representation**

Classification Illustration
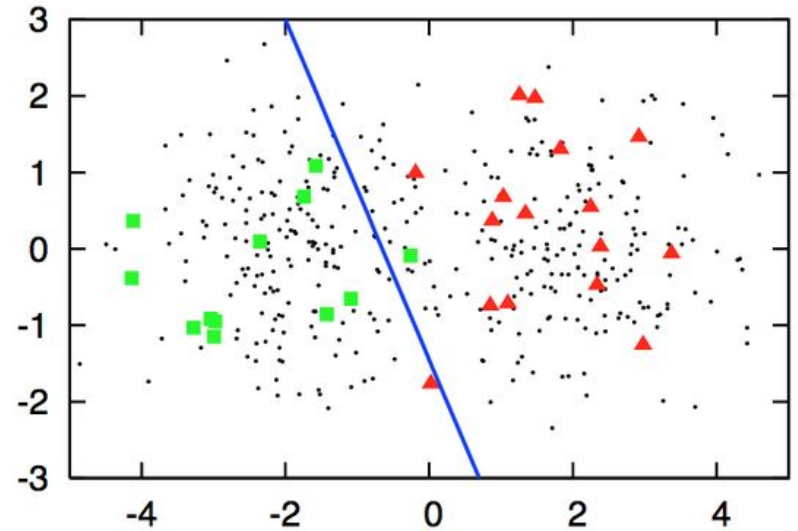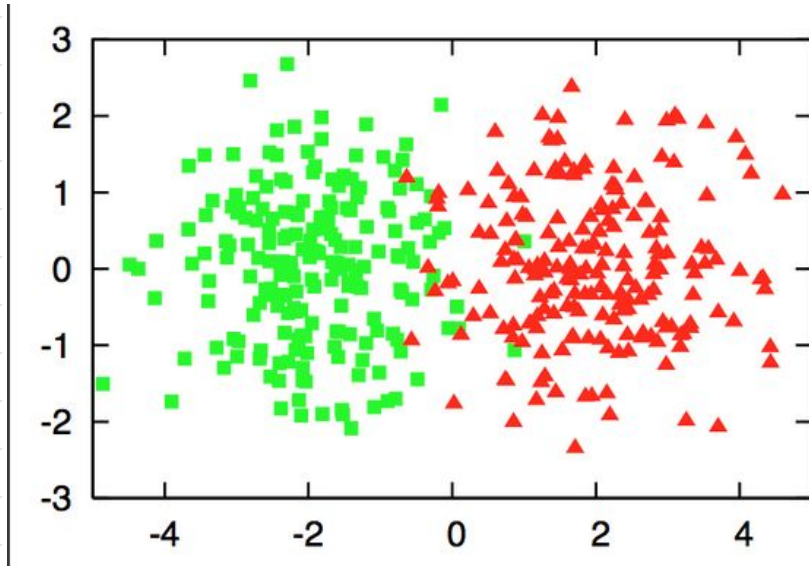
Natural Language Processing Basics

- **Language as Data**
- Tasks:
    - OCR: Turn an image of text into digital text
    - Speech to text: Transform audio to digital text
    - Translation: Si, por favor
    - Sentiment Analysis: Determine emotional intent behind text
    - Topic Modeling: Break text into topics and label the topics
    - Summarization: Produce a readable summary of text
    - Question Answering: Given a question, determine the correct answer
    - Text to image/video:
- Machine Learning breakthroughs
    - Word embedding: mathematically representing a "corpus" of language to capture relationships and context
    - Transformer models: Deep learning models that use word embeddings and "attention" to amplify important words and diminish less important words
        - Ex: ChatGPT
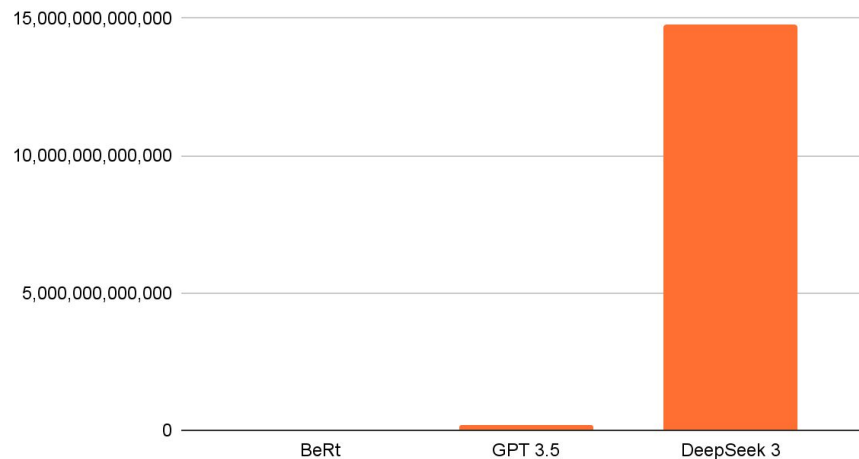
Putting it all together - Octopus Analogy

An octopus found a telegram wire under the ocean and listened to the dots and dashes between two correspondents for a length of time. One correspondent takes a vacation and the other's message are going unanswered. The octopus decides to fill in and send back patterns of dot and dashes based on the conversations it listened to before.

Scale of Generative AI today

- **BeRT**
  - Trained on 3.3 billion words including all of english wikipedia and book corpus
  - 1,024 GPUs for training, currently
- **GPT 3.5**
  - Trained on 175 billion tokens
  - Cost $4.6 million
  - 3,200 GPUs for training
- **DeepSeek 3**
  - Trained on 14.8 trillion tokens in both english and chinese
  - Cost $5.6 million (allegedly)
 - 2,048 GPUs for training

Words used to Train Transformer Models

15,000,000,000,000	
10,000,000,000,000	
5,000,000,000,000	
0	
	BeRt GPT 3.5 DeepSeek 3

Ethical AI

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Examples of adverse outcomes with AI use

- Apple card's machine learning algorithm to automatically assign credit limits offers lower limits to women regardless of their creditworthiness

- National Eating Disorder Association AI chatbot offers harmful dieting advice

- Several studies have demonstrated that certain AI-powered facial recognition systems have higher error rates when identifying individuals with darker skin tones or women
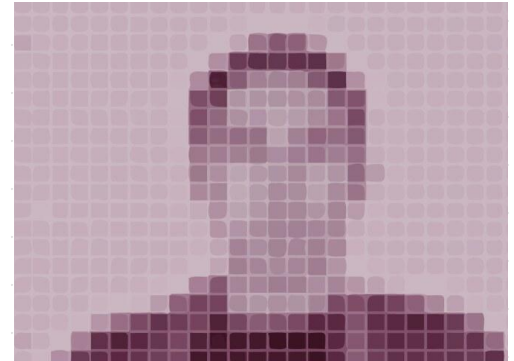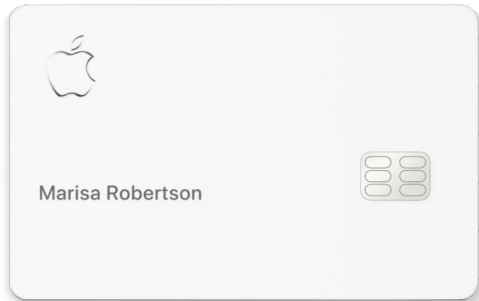
Avoiding Adverse Impact

Social Impact:

- Bias is inherent to AI
    - Data Bias: garbage in garbage out
    - Development bias: Bias from practitioners or system design
    - Interaction bias: Implicit bias of users and how they use it
- Measuring bias and testing for adverse outcomes is essential
- As users, we must be aware of inherent bias, screen for harmful or inaccurate information, and take responsibility for our use of AI

Environmental Impact:

- Generative models use large amounts of electricity and water for both training and day-to-day use
- Microsoft used approximately 700,000 litres of freshwater during GPT-3's training
- Daily ChatGPT use of 100 prompts (0.25 kWh) is roughly equivalent to:
    - Running a microwave oven for 15 minutes.
    - Powering a refrigerator for about 5 hours.
    - Charging a laptop 5 times.
    - 1 liter of fresh water

Privacy

- **Do not supply any proprietary, sensitive, or PII data to generative AI models**
- Only supply strategic, internal, or non-public data with training mode off
  - In ChatGPT go to the profile bubble > Settings > Data Controls > Improve the model for everyone > Off

Practical AI

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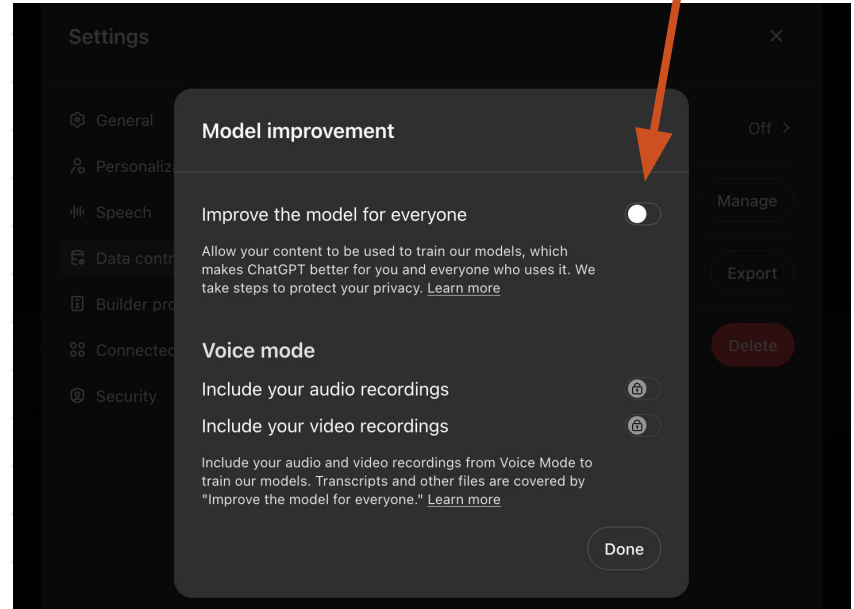
What is AI good at? What are its weaknesses?

AI is bad at:

- Empathy and Compassion
- Reasoning and Judgement
- Complex problem solving
- Adaptability
- Innovation and Creativity
- Tasks it was not trained for
- Context and data it was not trained on

AI is best at

- Data and context it was trained on
- Tasks it was trained for
- Revision and summarization
- Automating repeatable tasks
- Generating starting points for brainstorming
- Specific use cases with context
- Research

AI use cases for Non-Profits

General Solutions - Free or low cost resources like chatGPT

- Content generation
  - Thank you notes, newsletters, social media, general outreach, slides, annual reports
- Meeting productivity
  - Meeting transcription and notes summarization
- Brainstorming
  - Ideas for events, volunteer engagement, digital strategy
- Market research
- Simple data analytics

Custom Solutions - Partner with CASADIA SOLUTIONS or other specific vendors

- Data Analysis
  - Social impact reporting
  - Program evaluation
- Automating routine tasks
  - Data entry
  - Scheduling meetings
  - Marketing content and surveys
- Personalized donor marketing
  - Predict donor gifts
  - Segment donors
  - Prioritize best prospects and most impactful engagement
- Website chatbots

Effective Prompt Generation

- **Clarity and Conciseness:** Prompts should be direct and precise to avoid ambiguity that could lead to inaccurate responses.

- **Contextual Depth**: Providing sufficient context helps AI understand the prompt better, leading to more precise outputs.

- **Intended Outcome:** Clearly define the expected result, whether it's creating text, images, summarizing information, etc.

Examples of Well-Engineered Prompts:

- Instead of 'Write a post about technology,' use 'Write a 500-word blog post discussing the impact of artificial intelligence on modern non-profits, focusing on social outcomes and revenue growth.'

- Replace 'Analyze revenue data' with 'Use Python to analyze 2020-2022 revenue data from the attached spreadsheet, summarize trends in monthly revenue growth, and summarize yearly metrics for an annual report'

Common Pitfalls to Avoid:

- Overly broad or vague prompts can result in general and less useful responses.

- Assuming the AI understands implicit context or references not clearly stated in the prompt.

Advanced Prompt Engineering Techniques:

- Incorporating techniques like few-shot learning by providing examples within the prompt to guide the AI's output.

- Using iterative refinement where initial outputs are used as a basis for further prompts to refine and improve responses

HubSpot AI features

AI for Business Product

- AI assisted copywriting
- AI generated emails
- AI chatbot for your personal website

Customer Platform AI Features

- AI summarization
- AI search grader
- AI content writer
- Breeze Copilot
  - Interactive assistant
- Breeze agents (Beta)
  - Content, Social Media, Prospecting, Customer

Conclusion: Keep your eye out for use cases!

- Recognize tasks and **processes that cost you time**, are painfully boring, don't require much thought, someone with minimal training could do
  - Reading through survey results and summarizing general takeaways
  - Writing hundreds of personalized thank you notes
  - Entering data from handouts into a spreadsheet
  - Creating social media content across multiple platforms
- Think of **big picture questions** you could answer with your data
  - How can I measure the value add of my content strategy?
  - Which donors have the most capacity to give this year?
  - What is the most impactful way to engage a volunteer after an activity?
  - If we spent less time on x and more on y next year, what could we expect?
- **Contact CASCADIA SOLUTIONS for a complimentary consultation session!**

Thank you!

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