Introduction to AI/ML/LLM for Humanities and Social Science

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Agenda

welcome

Speaker notes go here.

Introduction to Neural Networks

Definition and Basic Concepts

- Neural Networks, AI, and ML
- Glossary

Historical Development

- Key milestones
- Resources for further reading

Importance & Applications

- Digital Humanities and North Campus disciplines
- Current research and use cases at UCLA

Strengths and Limitations

What AI is Good At

- Pattern recognition
- Language processing
- Image analysis

What AI is NOT Good At

- In-depth analysis
- Contextual understanding
- Nuanced interpretation

GoFAI vs. Generative AI

Large Language Models (LLMs)

Overview

- Key components (Transformers, Attention Mechanisms)
- Training processes and dataset types

Popular LLMs

- GPT-3, BERT

Applications in Digital Humanities

- Text analysis, translation, content generation
- Case Study: Literary Event Detection

How LLMs Can Help

Use Cases

- Brainstorming and outlining
- Prompt engineering for better AI responses

Demos

- Outline an AI presentation
- AI-assisted code generation
- Pleiades to Neo4j workflows
- NLP Twitter / Bluesky data

Issues

- Generated essays & ghost citations
- Ethical concerns

Large Vision Models (LVMs) & Vision Language Models (VLMs)

Overview

- Convolutional Neural Networks (CNNs)
- Generative Adversarial Networks (GANs)

Popular Models

- DALL-E, CLIP

Applications in Digital Humanities

- Image recognition & artwork restoration
- Example: Leonardo Impett's work

How AI "Sees"

- Handwriting analysis
- Case Study: Alexander Hamilton & George Washington Papers (HAT tool)

Future of AI & ML in Digital Humanities

Fine-Tuning AI for Humanities Research

- Domain expertise in model refinement
- Example: Human Pose Estimation (Bernasconi et al., 2023)

Technical Barriers

- AI-assisted tools like Microsoft's Co-Pilot
- Accessibility and skill development

Open vs. Closed AI

Key Definitions

- Open AI (e.g., open-source models)
- Closed AI (e.g., proprietary systems)

Implications

- Innovation, accessibility, and security concerns
- Ollama: Local AI
- Retrieval-Augmented Generation (RAG)

Ethical & Privacy Concerns

- AI decision-making in banking, housing, credit

Ethical Concerns

Trust & Authenticity

- AI's role in misinformation/disinformation
- Deepfakes & synthetic media
- Detection & prevention strategies

Bias & Fairness

- Algorithmic bias (Joy Buolamwini's research)
- Mitigation strategies & ethical data collection

Academic Integrity

- AI-generated content accuracy
- Copyright & ownership debates

Future Directions & Trends

Emerging Technologies

- Advances in neural networks
- AI's evolving role in Digital Humanities

Ethical AI at UCLA

- Chris Mattmann's AI Resources
- Generative AI at UCLA

Further Learning

- Courses, articles, and bibliography

Discussion & Questions