Machine Learning and AI: An Interactive Introduction

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Target Audience

Educators, artists, researchers, and technologists interested in approachable ways to understand and teach machine learning concepts through interactive visual and audio examples. High school level and above.

Expected Duration

Read: 5 minutes
Watch/Listen: 10 minutes (5 short screencasts, one with audio)
Interact: 5-10 minutes (4 sketches available to try)

Description of Material

This submission presents an explanatory introduction and a set of interactive visualizations and demos designed to make core machine learning concepts tangible. Each demo highlights a different way AI can act as a "pattern detective":

- **Clustering (k-means):** points grouped by similarity, with interactive control of the number of clusters and points.
- **Classification (hyperplanes):** decision boundaries illustrated visually and interactively.
- **Dimensionality Reduction (PCA):** compressing complex feature spaces into more interpretable 2D maps.
- **Audio Mapping (using the FluCoMa library in a Max/MSP app):** browsing and reshaping a space of sounds with additional user interface controls.

Together, these modules provide a cohesive, intuitive introduction to what machine learning *can* do—find patterns, suggest groupings, compress complexity, and generate new data—while also framing its *limits* (e.g., not understanding meaning, context, or culture).

The goal is to provide educators and practitioners with accessible, memorable tools for introducing machine learning concepts, bridging visual and sonic domains, and sparking conversation about both capabilities and limitations.

Note: Run the PowerPoint in the zip folder. All the media is embedded in the presentation; the videos are also included in the folder for reference. The HTML file is one of the interactive apps and is linked in the PowerPoint, and can be run independently as well.