**Name: Aaron Abromowitz**

**Topic: Spike Neural Nets (SNNs)**

**Why this is important: For edge devices (robotics, radars, self driving cars, etc.) they can’t use as much energy as a supercomputer or a laptop. SNNs are a neural that that has been gaining traction recently that uses much energy than CNNs, RNNs, etc., so is being researched for these types of devices.**

**URL:** [**https://www.youtube.com/watch?v=T0N34EhgHvU**](https://www.youtube.com/watch?v=T0N34EhgHvU)

**Name: Caleb Thornsbury**

**Topic: Backpropagation; The “Learning” in Machine Learning**

**URL:** [**https://youtu.be/2TaE4YifoC8**](https://youtu.be/2TaE4YifoC8)

**Name: Rafia Mirza**

**Topic: RAG (Retrieval-Augmented Generation)**

**Why this is important: People are using Gen AI for search, what are the ways the RAG can address hallucinations, accuracy.**

**URL:** [**https://youtu.be/MnUWkSo-RL0**](https://youtu.be/MnUWkSo-RL0)

**Name: Shawn (Yixiao Deng)**

**Topic: Machine Learning Interpretability**

**Why is it important? Interested in how human thinking can keep up with machine learning development, and what is causing human to not understand machine learning**

**URL:** [**https://youtu.be/E8Phyl\_NEPU**](https://youtu.be/E8Phyl_NEPU)

**Name:Xavier Mojica**

**Topic:BERT (Encoder)**

**URL:**[**smu365.Sharepoint.XavierMojica**](https://smu365-my.sharepoint.com/:p:/g/personal/xmojica_smu_edu/EfxPfMWB689BtHl7De5v7m4BLcSqI21a7nrWzcf1njc1VQ?e=3qo4OJ)

**Name: Senthil Kumar**

**Topic: Decoding Neural Networks - Past, Present and the Future**

**Why is this important? This topic is important because it bridges the gap between the technical evolution of neural networks and their practical, ethical, and futuristic implications. By decoding their journey and applications, we gain a deeper appreciation for their transformative power and prepare for the challenges and opportunities that lie ahead.**

**URL:** [**https://youtu.be/g8GbtjD9owY**](https://youtu.be/g8GbtjD9owY)

**Name: Pejal Rath**

**Topic: K-mean clustering**

**Why is it important?**

**K-means clustering is a critical tool in machine learning and data analysis because it simplifies complex data by organizing it into meaningful groups. This capability is vital for applications like customer segmentation, anomaly detection, and image compression across various industries, including retail, healthcare, and logistics. Understanding K-means builds a strong foundation for mastering other machine learning concepts, such as distance metrics, centroids, and optimization techniques. It helps generate actionable insights, uncover hidden patterns, and improve decision-making in areas like marketing, operations, and strategy.**

**URL:** [**https://vimeo.com/1034995201?share=copy**](https://vimeo.com/1034995201?share=copy)

**Name: Adam Ercanbrack**

**Topic: Agentic RAG (Retrieval-Augmented Generation)**

**Why is it important?: Automating the collection of data that is newer than the training data a particular LLM was trained on. This is important because LLMs cannot provide accurate answers to questions with more recent information. For example if you wanted an LLM to write an article on a late breaking world event, it would not be able to do so without access to RAG. The RAG data would allow the generative AI to then process a query and write an up to date article. The presentation covers CREWAI agents, LangChain, and ChromaDB. The agent system is introduced and a multi-agent system is explained in association with RAG and the process to build, gather, store, and retract information to build a news article.**

**URL:**[**https://youtu.be/8Lu76q8dU2Y**](https://youtu.be/8Lu76q8dU2Y)**,** [**https://smu-2u-com.zoom.us/rec/share/seTXN5HT-SD8sfjyLaUk3mMiH2oAX5aZrWVK89OtpqpdSEstgXQJu-u\_wXVXia0q.b8WIbOcCmoNnu4bi?startTime=1733513662000**](https://smu-2u-com.zoom.us/rec/share/seTXN5HT-SD8sfjyLaUk3mMiH2oAX5aZrWVK89OtpqpdSEstgXQJu-u_wXVXia0q.b8WIbOcCmoNnu4bi?startTime=1733513662000)**,**

**Name: Max Pagan**

**Topic: Sentiment Analysis with Transformers (focus on Job Satisfaction)**

**Why is it important: Transformer models have grown rapidly in popularity and become the most ubiquitous form of AI in the current AI boom. But how do they work? And, if you’re interested in using them in a human resources context, what could they do for you? Could they help with things like sentiment analysis, or determining job satisfaction? Using this HR-lens, we will learn how Transformer LLMs work.**

**URL:** [**https://youtu.be/k7\_HrMQ7ZUw**](https://youtu.be/k7_HrMQ7ZUw)

**Name: David Camacho**

**Topic: Transformers**

**Why is it important: This is important because over the past 7 years there has been an immense technological advancement in Transformers and NLP as a whole. First introduced in 2017 by researchers from the Google Brain team, transformers and their technicality was explained in the “Attention is All You Need” paper signaling that the Attention Mechanism is the heart of said transformer block. We review the history, component breakdown, and application of transformers in this video.**

**URL:** [**https://www.youtube.com/watch?v=rf\_OSEZQA38**](https://www.youtube.com/watch?v=rf_OSEZQA38)

**Name: Anishka Peter**

**Topic: Reinforcement Learning**

**URL:** [**https://youtu.be/hWCwfmUHx2I**](https://youtu.be/hWCwfmUHx2I)

**Name: Chris Johnson**

**Topic:Convolution for AI images and videos**

**URL:** [**https://youtu.be/xcKHCGd\_n7A**](https://youtu.be/xcKHCGd_n7A)

**Name: Erica Brooks**

**Topic: Reinforcement Learning from Human Feedback (RLHF) and Proximal Policy Optimization (PPO)**

**Why is it important: Reinforcement Learning from Human Feedback (RLHF) is important because it grounds AI behavior in human values and judgments, ensuring that models produce outputs that align with what people find useful, safe, and ethical. Together, RLHF and PPO enable the creation of AI systems that are both more aligned with human interests and more consistent in their performance.**

**URL:** [**https://youtu.be/eJ35O02S5JQ**](https://youtu.be/eJ35O02S5JQ)

**Name: Lani Lewis**

**Topic: RAG Ranking Review**

**URL:** [**https://youtu.be/0ScNCKDrqOg**](https://youtu.be/0ScNCKDrqOg)

**Name: Trevor Kunz**

**Topic: Learning with Cursor**

**Why it is important: Cursor is an AI powered IDE that can make it extremely easy to automate tasks. When we begin to automate tasks, we can often become complacent and do not put in the required effort to learn. This presentation will demonstrate principles of how we can use Cursor to enhance our learning rather than as a shortcut to automate and complete our work.**

**URL: https://youtu.be/s96YtmD849E**

**Name: Nolan Dulude**

**Topic: AlphaFold3: Personalized Care and neurodegenerative diseases**

**Why it is important: AlphaFold 3 is a revolutionary tool that is helping visualize protein and other molecular structures. Beyond structural prediction, it plays a critical role in advancing our understanding of neurodegenerative diseases, many of which are driven by abnormal protein folding and aggregation.**

**URL: https://www.youtube.com/watch?v=P4jevFUPZ\_s&ab\_channel=ndulude77**

**Name:Christian Castro**

**Topic:Digital Translation in the AI Era: Building an App to Overcome Language Barriers**

**Why it is important: Language and cultural barriers inhibit the exposure of ideas and knowledge around the world and we have the technology to overcome these barriers. Translation technology is improving day-by-day. Particularly for budget-restricted fields like religion and education, low-cost tools can be incredibly effective and important to continuing their work and breaking down barriers.**

**URL: https://www.youtube.com/watch?v=h0SNS2tNr74&feature=youtu.be**

**Name: Joel Laskow**

**Topic: Conversational AI and AI Governance in Vectorshift**

**Why is it important: Here we design Avery, an ethical AI chatbot designed for users to practice the 54321 Grounding Technique during a panic attack. The chatbot is designed using Vectorshift to adhere to the AI RMF 1.0 framework. The project aims to highlight the importance of ethical AI safety precautions and how they could be applied to a scenario where unsafe or unregulated AI could endanger users. The project also serves as an exploration of the capabilities of Vectorshift, an end-to-end AI Automations platform. We explore how we could use built-in processes to accelerate AI development, and then how we can use outside llm models to evaluate chatbot performance.**

**URL:** [**https://youtu.be/crDIWXbsEY4**](https://youtu.be/crDIWXbsEY4)

**Name: Amberly Rodriguez**

**Topic: Can AI replace professors?**

**Why it is important: It’s important to examine whether AI can replace professors because it gets to the heart of how education is changing. As AI tools become more advanced and widely adopted, they’re not just supporting learning, they are beginning to take on roles traditionally held by educators. This raises critical questions about the value of human instruction, the future of teaching jobs, and how students learn best. If institutions begin to rely too heavily on AI for cost savings or scalability, we risk losing the personal connection, mentorship, and critical thinking that professors bring to the classroom. Understanding the limits and possibilities of AI in education helps us make informed decisions about how to use it so it can enhance, rather than replace, the human elements that matter most.**

**URL: https://www.youtube.com/watch?v=xABEr2NMNYk**