NAIRR Pilot

# DEMOCRATIZING AI TRAINING AND ACCESS STATEWIDE

April 17, 2026

Henderson Community College
Preston Arts Center
9:15 AM - 4:15 PM

## AGENDA

| | | |
|---|---|---|
| **9:15 AM** | **WELCOME** | **DR. JASON WARREN**<br>*President, Henderson Community College* |
| **9:20 AM** | WORKSHOP GOALS & OVERVIEW | **CAROLINE LEACH**<br>*Program Manager, Democratizing AI Access & Training Statewide* |
| **9:30 AM** | INTRODUCTION TO AI & AI-READY DATA | **AARON MULLEN**<br>*Software Developer, Center for Applied AI* |
| **10:15 AM** | AI, THE WORKFORCE, & HIGHER EDUCATION | **DR. CRISTOPHER LEDFORD**<br>*Director of Data and Advanced Analytics, Council for Postsecondary Education* |
| **10:45 AM** | **BREAK** | |
| **11:00 AM** | MACHINE LEARNING | **AARON MULLEN**<br>*Software Developer, Center for Applied AI* |
| **11:30 AM** | ACCESSING NAIRR PILOT RESOURCES | **CAROLINE LEACH**<br>*Program Manager, Democratizing AI Access & Training Statewide* |
| **11:45 AM** | **LUNCH BREAK** | |
| **12:30 PM** | HOST REGION SPEAKER | **DR. MANMEET SINGH**<br>*DSOC AI Research Lab, Western Kentucky University* |
| **1:00 PM** | GENERATIVE AI & VIBE CODING | **VAIDEN LOGAN**<br>*Software Developer, Center for Applied AI* |
| **1:30 PM** | FOUNDATIONAL MODELS & LLMS | **MITCHELL KLUSTY**<br>*Software Developer, Center for Applied AI* |
| **2:00 PM** | COMPUTER VISION | **VAIDEN LOGAN**<br>*Software Developer, Center for Applied AI* |
| **2:30 PM** | **COFFEE & PEER NETWORKING** | |
| **2:45 PM** | AI PIPELINES | **MITCHELL KLUSTY**<br>*Software Developer, Center for Applied AI* |
| **3:30 PM** | APPLIED AI PANEL | **SUBJECT MATTER EXPERTS**<br>*Center for Applied AI* |
| **4:00 PM** | **CONCLUSION** | **CAROLINE LEACH**<br>*Program Manager, Democratizing AI Access & Training Statewide* |

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# SPEAKER BIOGRAPHIES



## MANMEET SIGNH

Dr. Manmeet Singh is an Assistant Professor in the Department of Earth, Environmental, and Atmospheric Sciences at Western Kentucky University. His interdisciplinary research lies at the intersection of climate science, artificial intelligence, and Earth system modeling. Before joining WKU, Dr. Singh was a Distinguished Postdoctoral Fellow at The University of Texas at Austin, where he worked on AI-augmented weather and climate prediction systems to improve forecasts related to extreme weather, health impacts, and disasters. He also served as a Scientist at the Indian Institute of Tropical Meteorology (IITM), contributing to national climate modeling efforts and leading several projects on aerosol-monsoon dynamics and climate data downscaling. Dr. Singh holds a Ph.D. in Climate Studies from the Indian Institute of Technology Bombay. His research has been recognized globally, including participation in high-impact international collaborations such as the Paris Olympics 2024 Research Demonstration Project and the Earth Virtualization Engines. Dr. Singh also maintains an active interest in mentoring, open science tools, and advancing geoscience education through digital platforms.



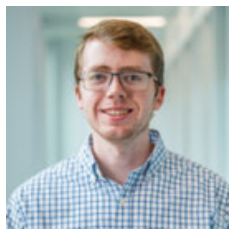
## CHRISTOPHER LEDFORD

Dr. Christopher Ledford serves as the Director of Data and Advanced Analytics at the Kentucky Council on Postsecondary Education (CPE) where he uses data analytics to generate inferences on improving postsecondary affordability, transitions, success, equity, talent, and value in Kentucky. Prior to CPE, he served in teaching and IR positions that grew his passion for serving students. As an institutional researcher, he led award-winning projects that shaped institutional policy around student basic needs, utilization of student communication tools, and improved demographic representation of students among institutional employees. In the classroom, Dr. Ledford enjoyed teaching political science students to be empirical, thoughtful, and civic-minded cititzens. At CPE, he continues to serve students by transforming Kentucky postsecondary data into actionable strategies and policies that improve student access to higher education and credentials of value.



## CAROLINE LEACH

Caroline Leach is a Data Management Specialist at the Center for Applied AI and Program Manager for Democratizing AI Training & Access Statewide. With a background in physics and experience in ed-tech & nonprofit organizations, her work focuses on prototype development and product management, supporting researchers from concept through successful execution of applied AI projects.



## AARON MULLEN

Aaron Mullen is a Software Developer at the Center for Applied AI. He began his work with the group as an undergraduate intern and now holds a graduate degree in Data Science. His expertise includes machine learning and data visualization, working on projects leveraging classification and time series forecasting.



## VAIDEN LOGAN

Vaiden Logan is a Software Developer at the Center for Applied AI. With a background in Computer Engineering and pursuing a graduate degree in Computer Science, Vaiden's work focuses on large language models and the DGX computing cluster. He's experienced in building systems that integrate AI across a variety of applications.



## MITCHELL KLUSTY

Mitchell Klusty is a Software Developer at the Center for Applied AI. With a background in Computer Science and as a graduate student in Computer Science, his work focuses on the development and application of large language models and computer vision systems, with an emphasis on secure systems design and analysis.

## WIFI: KCTCS-STUDENT-GUEST

**Website: https://caai.ai.uky.edu/about-us/news-and-events/nairr-pilot-expansion-project/**
**Technical Hub Site: hub.ai.uky.edu/**

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# AI VOCABULARY

| | |
|---|---|
| **Agent** | An AI system that can reason, plan, and take actions (such as calling tools or APIs) to achieve a goal autonomously. |
| **API** | (Application Programming Interface) A structured way for software systems to communicate with each other using defined requests and responses. |
| **Attention / Self-Attention** | A mechanism that allows a model to weigh the importance of different parts of the input when processing each element. Self-attention computes attention within the same sequence, helping the model understand context and relationships. |
| **Computer Vision** | Transforms how organizations process visual information by detecting patterns in images and video. |
| **Deep Learning** | A subset of machine learning that uses neural networks with many layers to learn complex patterns from large amounts of data. |
| **Embeddings** | Mathematical representations that enable AI systems to understand relationships between concepts. |
| **Foundation Models** | Large-scale machine learning models trained on vast and diverse datasets that can be adapted to many downstream tasks (e.g., text, images, code) rather than a single specific task. |
| **LLM** | (Large Language Model) A neural network trained on vast amounts of text data to understand and generate human-like language across a wide range of tasks. |
| **Machine Learning** | Enables systems to discover patterns in data without explicit programming for every scenario. |
| **Multimodal AI** | Processes different information types simultaneously (e.g., text, images, audio) to provide comprehensive analysis and decision-making. |
| **Pre-training** | The initial training phase where a model learns general patterns from large datasets before being adapted to specific tasks |
| **RAG** | (Retrieval-Augmented Generation) Combines the reasoning capabilities of language models with access to current, specific information sources for accurate, up-to-date responses. |
| **Self-Supervised Learning** | A form of unsupervised learning where labels are automatically generated from the data itself to train the model. |
| **Supervised Learning** | Training where the model learns from labeled data (inputs paired with correct outputs). |
| **Transfer Learning** | The practice of reusing a pre-trained model on a new, related task, reducing training time and data requirements. |
| **Tokenization** | The process of breaking raw input (text, code, etc.) into smaller units called tokens that a model can process. |
| **Tool Calling** | Extends AI capabilities beyond core functions by enabling access to external services and software while maintaining conversation flow. |
| **Transformer** | A neural network architecture that processes sequences in parallel using attention mechanisms, enabling efficient learning of relationships between elements in data such as words in a sentence. |
| **Unsupervised Learning** | Training where the model discovers patterns or structure in unlabeled data without explicit target outputs. |

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# NAIRR Pilot

## National Artificial Intelligence Research Resource Pilot

NAIRR is a multi-agency public-private pilot coordinated by the NSF to connect U.S. researchers and educators to computing capacity, tools, data, and training resources for AI research. Read more about NAIRR on their website: nairrpilot.org/about/overview

We've created this document to highlight some key information and list relevant links for your reference after the event, please visit the NAIRR Pilot website for the latest information.

Applications for NAIRR Pilot resources are accepted on a rolling basis.

- Proposals accepted at any time (<3 pages)
- Proposals peer-reviewed approximately monthly
  - Soft deadline: 15th of the month
  - Selected awards notified generally within 3 months
- If awarded, there will be resource onboarding between NAIRR Pilot Resource and Proposer
- Use of NAIRR project resources must be completed within 12 months, can be shorter duration (specific opportunities may be shorter). Proposers may have multiple submitted proposals and/or active projects.

Information about currently available resources for researchers is at nairrpilot.org/opportunities/allocations, and for educators at nairrpilot.org/opportunities/education-call. Instructions for proposals can be found at nairrpilot.org/nairr-pilot-proposal-instructions.

**Remember: Mention your participation in this NAIRR Pilot Expansion Project in your proposal!**

Need more information?

- Check out the NAIRR YouTube channel (youtube.com/@NAIRRPilot) for videos including a step-by-step request walkthrough: How to request resources (with slides linked in the video description)
- The NAIRR Pilot website has an FAQs page (nairrpilot.org/help/faq)
- NAIRR Pilot Program offers Office Hours every second Tuesday 3–4 PM EST and fourth Wednesday 12–1 PM EST (nairrpilot.org/help/office-hours)

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