Frontier Lab for AI Readiness (FLAIR) Project
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FORT HAYS STATE UNIVERSITY
TEACHING INNOVATION
& LEARNING TECHNOLOGIES

FLAIR Abstract

The Department of Teaching Innovation and Learning Technologies (TILT) at Fort Hays State University aims to establish the **"Frontier Lab for AI Readiness"** (FLAIR) to harness innovative artificial intelligence methods for the growth and development of Northwest Kansas. This initiative would position FHSU as the epicenter for AI training, education, and advancement on the Great Plains. FLAIR's objectives are threefold: First, it will offer educational opportunities to FHSU students and the Northwest Kansas community, including certificates, badges, and apprenticeships, through genuine interdisciplinary collaborations. This lab will equip learners for an AI-focused workforce. Second, FLAIR would connect with the community to tackle rural-specific challenges by applying AI to support sectors like agriculture, education, healthcare, small businesses, data analysis, and community infrastructures. Last, it will ensure that AI's transformative power benefits the regional economy by working closely with local enterprises to boost workforce development. By launching FLAIR, FHSU aims to become a leader in applied AI, foster interdisciplinary and community-wide technological collaborations, and chart a sustainable course for Northwest Kansas. As the integration of AI becomes more widespread, FHSU would be poised to lead its application in rural settings.

Background

Rural communities are plagued by shortages in fields like education (Ingersoll & Tran, 2023) and healthcare (Anaraki et al., 2022), with their qualified workers leaving the state for better resources and less stressful working conditions (Stratton et al., 1995). Artificial intelligence (AI) provides one possible route to abating these issues and promoting sustainability throughout rural areas. AI has the potential to change the economic landscape of the Great Plains, easing the burden of strained workers in the short term while protecting the resources of the region and making it a more enticing place to live in the long term. Further research and collaboration with local businesses can align upcoming AI innovations with the unique needs of rural communities.

Healthcare
For rural areas especially, where resources are spread thin, innovations that not only improve healthcare as a whole but also lighten the load of overworked practitioners and support staff can strengthen the community and help retain its population of qualified healthcare workers. With further development, generative AI (GenAI) could provide support to providers, increasing the efficiency of the healthcare process by allowing providers to communicate more effectively with an up-to-date medical knowledge base and assisting in more menial responsibilities that are required for healthcare to run smoothly (Ahmed et al., 2023). To start, GenAI has the potential to aid in administrative duties such as scheduling appointments, supporting ethical decision-making, and communicating with patients about their symptoms to assist practitioners in triage before an appointment.

Agriculture
Many variables are at work in optimizing agricultural production, and AI can help in predicting for some of those events, allowing farmers to better invest resources in preparation for negative outcomes, and providing recommendations that would promote sustainability throughout the sector. AI has the potential to assist in providing longer, more accurate weather forecasts (McGovern et al., 2024) and detecting diseases in cattle (Hajnal, 2023), poultry (Sadeghi et al., 2023), and crops (Kabilesh et al., 2023). By integrating AI in agricultural monitoring and decision-making, AI can significantly contribute to increasing agricultural output and thus support the economy of surrounding rural areas.

Education
Working alongside teachers, AI can allow for more individualized education (Pearce, 2024), providing opportunities for student learning that might not otherwise be available in rural school districts. Grading papers is traditionally a very time-intensive process for teachers (Ivanovič, 2023). GenAI can assist in giving students feedback for their writing, which may create space in classroom curricula for further writing practice. With further development in real-time, voiced social interaction, AI can work alongside teachers to answer students' questions using a deeper wealth of subject knowledge (Edwards & Cheok, 2018).
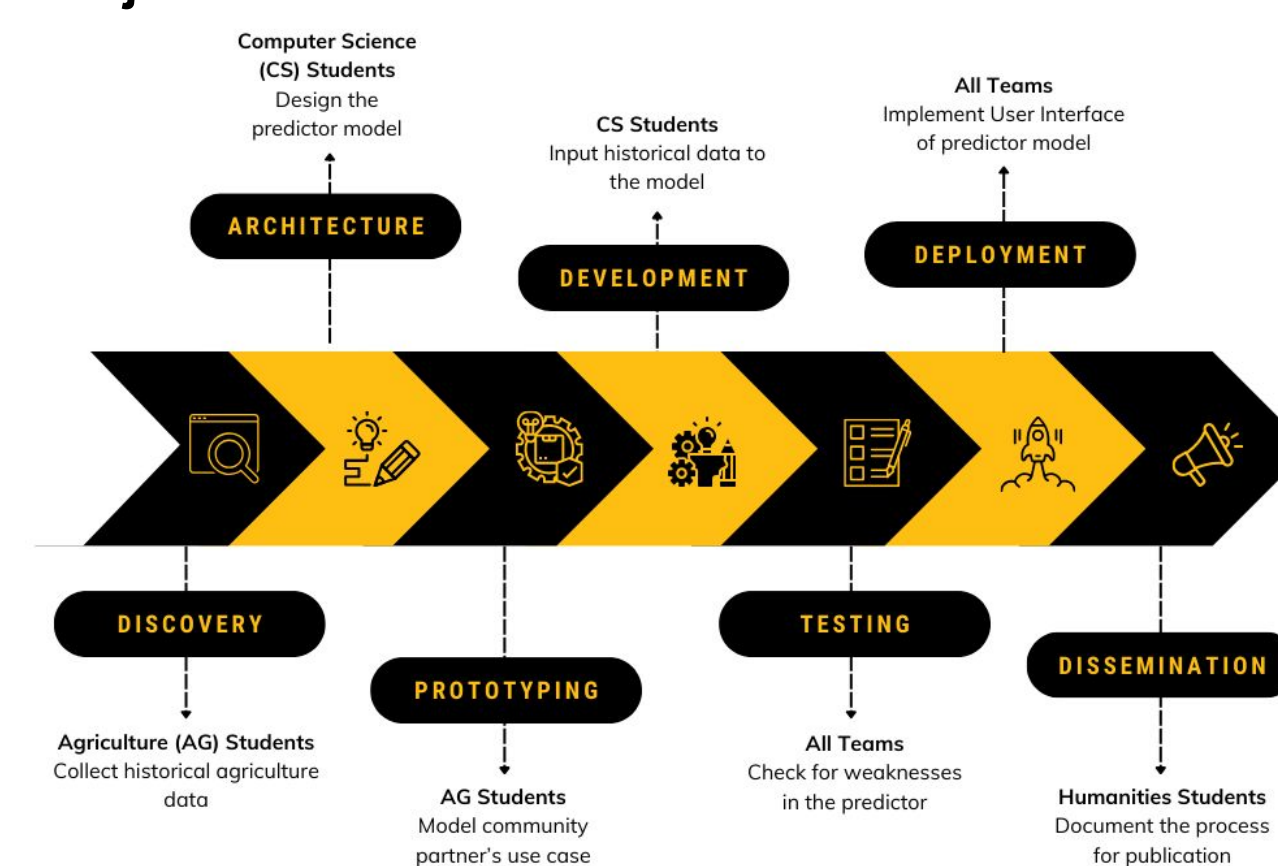
Summer Pilot

A pilot project has been launched for an interdisciplinary community-based AI research project. A team of four faculty— Dan McClure (History), Dr. Anas Hourani (Computer Science), Jeremy Ryan (Agriculture), and Dr. Magdalene Moy (TILT)—and twelve students will work with High Plains Farm Credit to develop a real-world AI solution to predict market trends. The team will work with the community partner to train and validate predictive models using historical weather data, commodity prices and trading volumes, global market trends and trade data, and social media for market sentiment tracking.

Project Objectives

➢ **To Develop an AI Solution:** Collaboratively design and implement an AI-driven tool capable of predicting agricultural market trends, enhancing decision-making for High Plains Farm Credit and potentially other stakeholders in the agricultural sector.

➢ **To Pilot an Interdisciplinary Educational Model:** Utilize the project as a foundation for experiential learning and apprenticeship, by engaging in interdisciplinary research collaborations.

➢ **To Inform Curriculum Development:** Serve as a pilot for the development of a sustainable capstone course, eventually contributing to an AI certificate and badging program at Fort Hays State University.

➢ **To Strengthen Community Partnerships:** Foster a model for university-community collaboration that can be replicated in other contexts, emphasizing the role of the university as a catalyst for innovation and workforce development in Northwest Kansas.

Project Timeline

Computer Science (CS) Students — Design the predictor model
ARCHITECTURE
CS Students — Input historical data to the model
DEVELOPMENT
All Teams — Implement User Interface of predictor model
DEPLOYMENT

DISCOVERY
PROTOTYPING
TESTING
DISSEMINATION

Agriculture (AG) Students — Collect historical agriculture data
AG Students — Model community partner's use case
All Teams — Check for weaknesses in the predictor
Humanities Students — Document the process for publication

Project Deliverables

➢ **AI Predictive Tool**: A functional AI-driven tool for predicting agricultural market trends.

➢ **Pilot Evaluation Report**: Comprehensive analysis of project outcomes, learning impacts, and recommendations for future curriculum development.

➢ **Curriculum Framework**: A framework for an AI certificate program, including a capstone course influenced by project findings.

➢ **Dissemination Materials**: Publications, presentations, and other materials designed to share project insights and outcomes.

Community Collaboration

Healthcare
Education
Agriculture
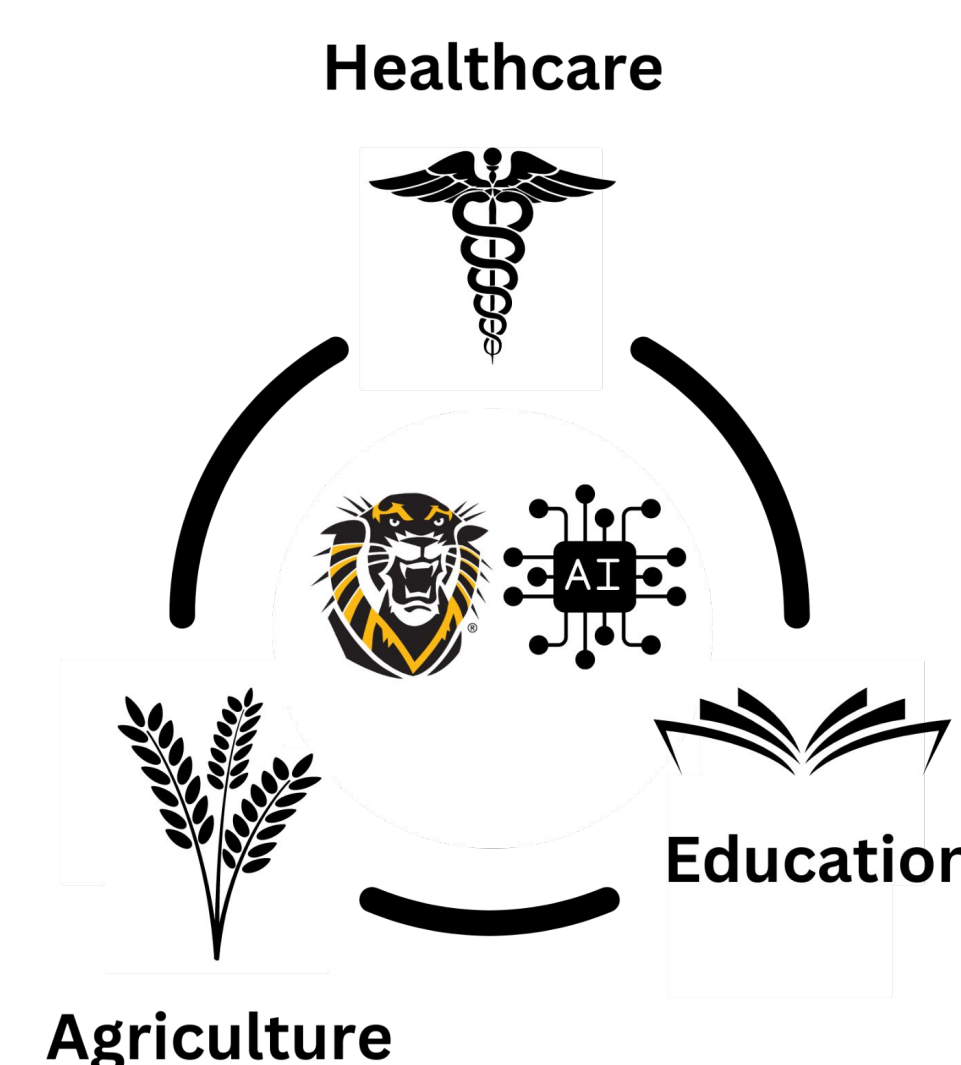
We are seeking **community partners** who may benefit from an AI-driven solution for their business.

We are seeking **FHSU departments** who would are interested in establishing an AI certificate program. Our goal is to provide FHSU students the opportunity to receive an AI certificate in their major.

Current Projects
1. Agriculture Trend Predictor Model
2. AI-Drone Model for Farming
3. FHSU Syllabus Generator
4. Assignment Question Generator

Please contact us if you or someone you know would like to partner with FLAIR to develop an AI-driven solution. We would love to work with you!

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AI Certificate Program

Computer Science
AI in Computer Science
Computer Science offers two options for AI certificates for undergraduate and graduate students. The AI certificate program provides students the opportunity to apply their knowledge to solve real-world problems through a community-based capstone project.

Required Courses (18 Credit Hours):
● CSCI 601 Advanced Programming (3 Credit Hours)
● CSCI 866 Data Mining and Knowledge Discovery (3 Credit Hours)
● CSCI 865 Artificial Intelligence/Machine Learning (3 Credit Hours)
● INF 652 Database Design and Programming (3 Credit Hours)
● Data Visualization (in process) (3 Credit Hours)
● Capstone Project (3 Credit Hours)

FHSU Generative AI Task Force

The Generative AI Task Force was initiated Fall 2023.

1. Generative AI Policy
   a. Listening sessions were held Spring 2024
   b. Guidelines anticipated for Fall 2024

2. Education & Outreach
   a. AI Certificate
   b. AI Badge
   c. UNIV101 Module anticipated for Fall 2024

3. Research & Future Careers
   a. GenAI Podcast Series
   b. GenAI Blog Series

AI Institute 2024 Resources
https://tigerlearn.fhsu.edu/a-i-institute-spring-2024/

References

https://docs.google.com/document/d/1f mqTVE8dyV623bA0PziqfnBjXcS-nE8JJ 79FWeikycl/edit?usp=sharing

Acknowledgements