Ag Innovation Forum
Panel on Artificial Intelligence

Pascal Hitzler

Professor; Lloyd T. Smith Creativity in Engineering Chair
Director, Center for Artificial Intelligence and Data Science (CAIDS)
Member of Board of Directors, Institute for Digital Agriculture
    and Advanced Analytics (ID3A)

Computer Science, Kansas State University

Ag Innovation Forum, Kansas City, February 2024, Hitzler

KANSAS STATE
UNIVERSITY®

Institute for Digital Agriculture
and Advanced Analytics

Digital Agriculture and Advanced Analytics

· · · · ·

The K-State Institute for Digital Agriculture & Advanced Analytics (ID3A) is a people-centered interdisciplinary collective transforming learning, research and outreach around digital technologies and advanced analytical methods to enhance agricultural, environmental, and socioeconomic decision-making.

Find out more about the K-State Institute for Digital Agriculture & Advanced Analytics (ID3A)

WHAT TO EXPECT FROM ID3A

Meaningful public-private partnerships to drive engineering innovations and digital solutions to fundamentally transform decision-making to meet the emerging needs of our communities, state and world.

Develop students and learners in the Institute who will graduate prepared to take on real-world situations in the labor market.

Assemble interdisciplinary teams from multiple academic disciplines to develop and disseminate enhanced problem-solving approaches, solutions, and recommendations.

The K-State Institute for Digital Agriculture & Advanced Analytics effort is driven by a leadership team with representatives from the College of Agriculture, College of Arts & Sciences and College of Engineering. The Institute looks forward to expanding further to include partnerships with additional colleges across all K-State campuses.

AI is broad and multi-faceted, and data is key!

▶ Deep Learning: for data analysis, e.g. classification and prediction

▶ Knowledge Graphs: For lowering cost of data management and re-use

▶ Combinations and synergies thereof, e.g. Neurosymbolic Artificial Intelligence

▶ Kansas State has a broad portfolio in foundational and applied AI research

KANSAS STATE
U N I V E R S I T Y.

Institute for Digital Agriculture
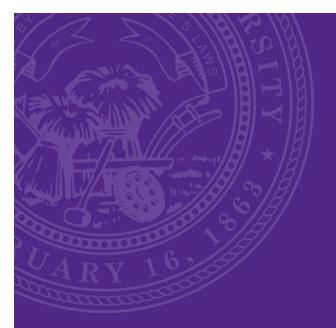and Advanced Analytics

Example ongoing projects

▶ $6.4M NSF KnowWhereGraph; $1M to K-State

  ▶ World's largest spatial knowledge graph, with a lot of ag-relevant data (such as soil data)

▶ $1.2M (direct) K-State GRIP project

  ▶ Data integration for wheat yield prediction and farm management recommendations

▶ $240k (direct) K-State GRIPex project

  ▶ On-board computer vision for precision agriculture machinery

▶ $3M NSF Proto-OKN projects; $1M to K-State

  ▶ PFAS contamination data management and analysis, plus education on SOTA technology

KANSAS STATE
U N I V E R S I T Y.
Institute for Digital Agriculture
and Advanced Analytics

Beware of the AI Hype

▶ Despite fast progress, reliability and trustworthiness of current AI systems is limited

    ▶ See e.g. ChatGPT (LLM) hallucinations; this carries over to other deep learning approaches

▶ This will be overcome, eventually, but more research is needed

▶ K-State researchers are investigating how to develop trustworthy AI

    ▶ "anticyclic" thinking: preparing now for the next big issue

KANSAS STATE
U N I V E R S I T Y.
Institute for Digital Agriculture
and Advanced Analytics

Thanks!

Visit **ksu.edu/ID3A** for more info.

E-mail us at **ID3A@ksu.edu** at any time for questions, collaboration, and more!

KANSAS STATE
U N I V E R S I T Y.

Institute for Digital Agriculture
and Advanced Analytics