

Applying an integrative suite of AI tools for understanding and enhancing healthy food systems

Jody
Leon
Worapan
Tin Ko
Nongnuch
Mika
Kathryn
Sabri

Harris
Harris
Kusakuniran
Oo
Jindaratnanoporn
Matsuzaki
Backholer
Bromage

Institute of Nutrition, Mahidol University *j.harris@associate.ids.ac.uk
Fenix Insight, Ltd.
Faculty of Information and Communication Technology, Mahidol University
Institute of Nutrition, Mahidol University
Institute for Population and Social Research, Mahidol University
Johns Hopkins Bloomberg School of Public Health
Global Centre for Preventive Health and Nutrition (GLOBE) at Deakin University
Institute of Nutrition, Mahidol University

Food systems, and the food environments where supply meets demand, are fundamental in shaping diets and health.

These are hugely complex and dynamic systems, and traditional research methods have struggled to capture this complexity. AI is inherently more capable at understanding and interpreting complexity and can be applied to strengthen food system research and policy.



The FEED-MU project is taking an existing AI platform for understanding global conflict (Fenix Insight Online) and adapting it to understand food systems. This includes AI-assisted and machine learning-powered scanning, curation, mapping, and geospatial analysis of open-source intelligence in 26 languages from over 100 countries; entity recognition from words or images; recognizing text networks and sentiment analysis; vectorizing, similarity and semantics analysis; and anomaly detection using a multiplicity of data sources in real time.



This platform has numerous applications to food systems that the project will apply, including comparing conventional vs. AI mapping to understand food accessibility and convenience; recognizing and categorizing foods and outlets through visual or semantic analysis for better understanding of local food availability and dietary patterns; sentiment analysis for better understanding of food desirability; capturing of large-scale vendor data to understand price and affordability; and undertaking these analysis at a huge scale and in close to real time, to better understand change and drive transformation.

AI has the potential to answer some of the biggest remaining food system questions, such as how the food supply and nutrition ends of the system connect, and how different social, economic and political drivers affect food system change across contexts. Understanding the process of using AI for food system research is an important emerging field, and adapting and applying an existing suite of AI-powered analytic tools can leapfrog years of expensive development, allowing faster, more accurate, and more useful results for improving food systems.