

## AI Systems

### Model Personalization

- ❑ **High-Fidelity Personalization**
- ❖ FairCL (IJDS, 2025; INFORMS 2023 QSR best paper competition finalist) [3]
- ❖ Personalized recommendation policy (target KDD 2026) [10]
- ❑ **Digital Population**
- ❖ CrowdLLM (in submission to IJDS; 2025 INFORMS QSR best paper competition finalist) [2]

### Uncertainty Quantification

- ❑ **UQ Methodologies**
- ❖ ALARM (under review at IJDS) [1]
- ❑ **Learning under Uncertainty**
- ❖ Nurse fatigue management under uncertainty (ongoing)

### Data Enhancement

- ❑ **Data Generation**
- ❖ Team-then-trim (under review at ICLR 2025) [5]
- ❑ **Data Collection**
- ❖ Learning to Collect (in submission to IJDS) [8]
- ❖ CG-MOCU (target ICML 2026) [11]
- ❑ **Data Fusion**

## Humans

### Behavior Modeling

- ❑ **User-system interactions**
- ❖ Robust LDT (IISE transactions, 2024) [4]

## Domain Knowledge

### Knowledge Extraction

- ❑ **Expert Knowledge Elicitation**
- ❖ Mixture of chains (ongoing) [12]
- ❑ **Rule-based learning**

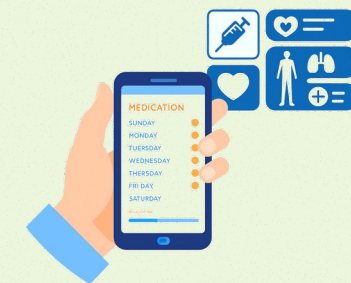
### Knowledge-Informed Learning

- ❑ **Knowledge as priors**
- ❖ Recommendation via structured human priors (under review at WWW 2026) [6]
- ❑ **Knowledge as regularization**

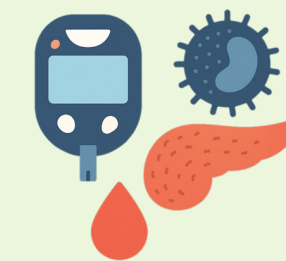
## Potential Funding Sources

**Government Agencies:** NSF SCH, NSF FDT-Biotech, NSF Future CoRe (formerly NSF SCC), NIH, DARPA, ARPA-H, ...  
**Non-Profit Organizations:** Breakthrough T1D (formerly JDRF), ...  
**Industry Sponsors:** Amazon.com, Meta Platforms Inc., ...

## Research Applications



Healthcare App



Type-I Diabetes



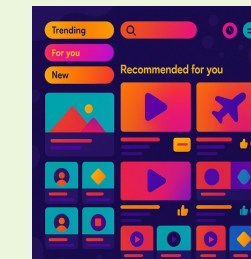
Gene Regulation Study



Travel Demand Management

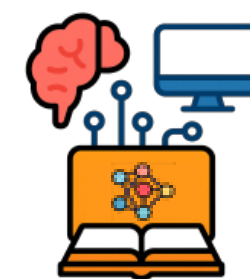


Smart Pricing



Video Recommendation

## Technical Approach



Generative AI



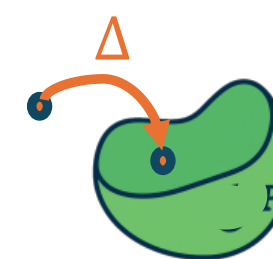
Optimal Experimental Design



Variational Bayes



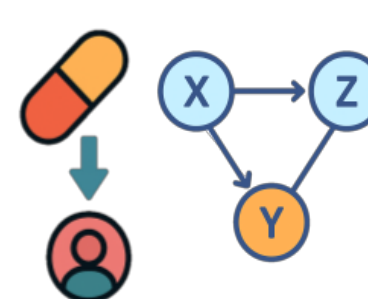
Conformal Prediction



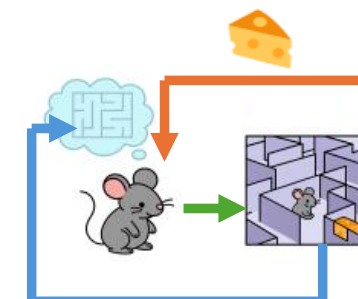
Prediction-powered Inference



Bayesian Optimization



Causal Inference



Reinforcement Learning



Multi-task Learning