Efficient Learning with Human-in-the-Loop in Structured, Noisy and Temporal Domains

Sriraam Natarajan, University of Texas at Dallas

- Summary of Effort
  - AF Relevance: Mathematical Foundations, Machine Analytics
  - AFRL POC: Dr. Erik Blasch
- Key Focus of Scientific Research
- Goal: Development of algorithms that can learn from heterogeneous, noisy and structured data with a human-in-the-loop.
- Accomplishments
  - Initial results on human-in-the-loop active algorithms are promising
  - Transition – Code available publicly on starling.utdallas.edu
- Other performers on project
  - Dr. Gautam Kunapuli (Research Associate Professor) & Graduate Student Navdeep Kaur

Efficient Learning with Human-in-the-Loop in Structured, Noisy and Temporal Domains

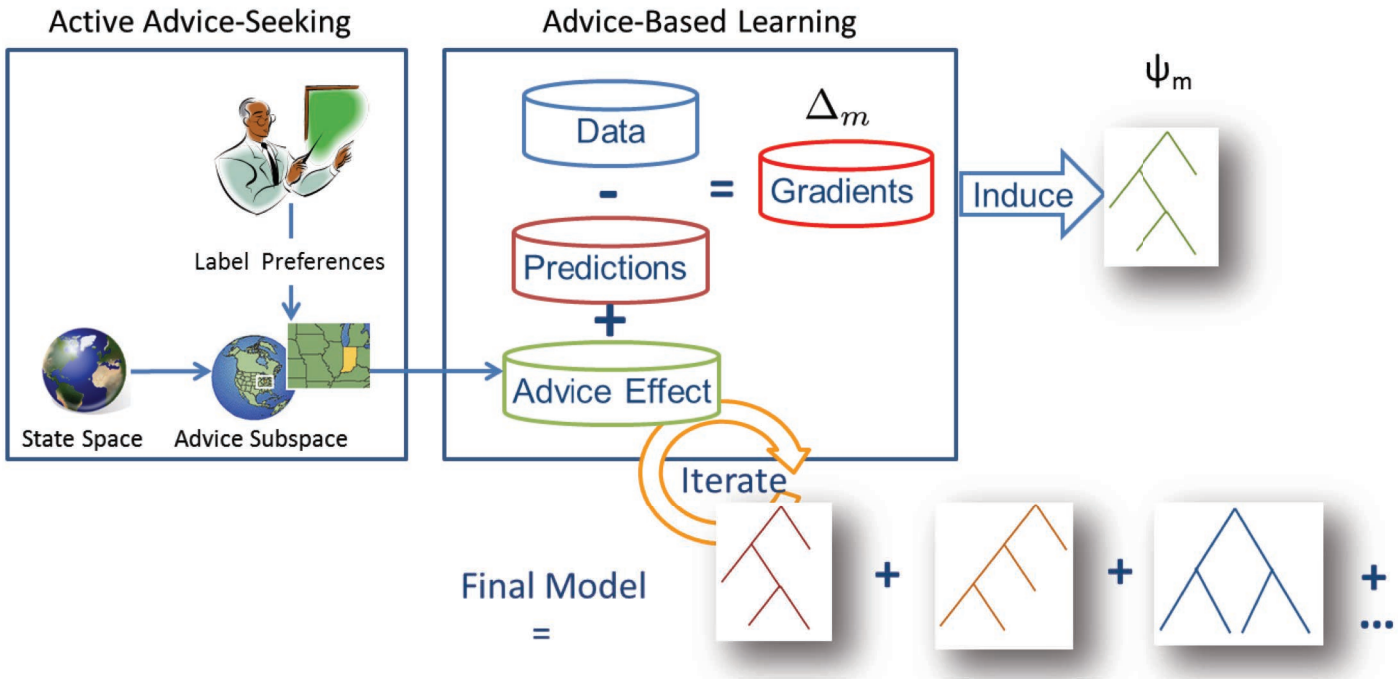
Sriraam Natarajan, University of Texas at Dallas

THEORY and Results

New S&T advances for new capabilities through the project:

- **Algorithms: Development of human-in-the-loop algorithms that treats human as more than ”mere labeler”. Integrated with state-of-the-art boosting algorithm**

- **Systems Software: Developed in Java for learning multiple relational models**



Efficient Learning with Human-in-the-Loop in Structured, Noisy and Temporal Domains

Sriraam Natarajan, University of Texas at Dallas

- Accomplishments
  - Learning algorithms for human-in-the-loop
  - Relational continuous time models
- Awards
  - Submitted two papers already based on the initial results
  - Graduate student and a research Professor supported
  - PI has been an invited speaker this year at the premier workshop in Statistical Relational AI, NSF Data Science Workshop at Belgrade and at ACAI summer school in Italy
- Reporting
  - Published a journal paper in Frontiers of Robotics and AI
- Transitions (DARPA, SBIR, Prime Interest, AFRL)
  - Code publicly available at starling.utdallas.edu

- Coordination/Synergy
  - AFRL – Working closely with Dr. Erik Blasch
  - Data coordination - NA
- Exposure/Use by other groups
  - Current code base has been downloaded by over 100 different groups. Recognized as state-of-the-art in relational probability models. Downloaded and used in US/Canada/Europe/India and Brazil