PRAGMA37 Panel

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Background

- My interests are in distributed systems, in particular applications of virtualization techniques in cyberinfrastructure (CI)
- Applications of CI in domain sciences – in particular, lake ecology
  - GRAPLEr, Smart Reservoirs
- Recent emphasis of my work – edge computing
- AI techniques enable many application components that run on the edge

Applications

- Target identification and tracking
  - e.g. for safety in smart and connected cities
  - Locating and tracking vehicles based on license plates, people based on face recognition/biometrics
- Monitoring
  - For instance in lake ecology, we're considering applications of cameras to help detect algal blooms
- Biodiversity group at UF is also considering AI applications to identify specimen images from museum collections

International partners - challenges

- Infrastructure challenges, edge computing is still an evolving technology
  - Testbeds; training and testing; applications and benchmarks
- Different physical environments
  - E.g. cars vs. scooters/bikes vs buses; different devices for data capture (cameras, sensors)
  - May require different approaches to training/testing
  - AI applications that can generalize and apply across multiple countries
- Sociotechnological and legal challenges include privacy
  - What data can be trained on, what privacy guarantees are required with applications such as license plate/face recognition may vary across countries

Training challenges

- One key challenge is the training of students and scientists in the various domains in how to use and apply AI techniques to solve their problems
  - “AI thinking”
- Tools are still fairly complex and require significant investment
- Pairing AI, domain scientists, and CI researchers/practitioners in collaborative research is key
- Need for training datasets also requires significant human effort, and can be a barrier to adoption in domain sciences.