Aspiring PI Info:
- Ivan Ruchkin
- Assistant Professor
- University of Florida, Electrical and Computer Engineering

Research interests:
- **Formal methods:** specification, verification, run-time monitoring
- **Autonomy:** perception, prediction, control, recovery
- **AI/ML:** safety of learning-enabled systems, neuro-symbolic techniques

Current projects:
- **NSF CPS:** "Collaborative Research: CPS: Small: Neuro-Symbolic Bridge: From Perception to Estimation & Control"
- **AFRL/RW:** "Provable Resilience for Visual Terminal AI Guidance"
- **AFRL/RW:** "Cyber Agility against Multi-Pronged Attacks: Architecture, Detection, and Mitigation"

Project Idea(s)…
- Verified neuro-symbolic training of robot policies
  - Joint optimization of perception & control
  - Verified by construction
- Who will benefit:
  - *Engineers:* easier and faster training
  - *Users:* higher performance + safety guarantees
- Transition to practice:
  - Physical robotic demonstrations
  - Possibly collaboration with companies/labs
- Education and Outreach
  - Graduate courses
  - Undergraduate hands-on research
- Anticipated impacts
  - 2-5x faster training
  - 20-30% performance improvement
  - Qualitative Δ : safety by construction

Collaborators sought:
- Formal methods:
  - MDP/POMDP analysis/synthesis
  - Neuro-symbolic AI/ML experts
- Field:
  - Robotics researchers & companies/industry labs