FW-HTF-P: **Mitigating Risks in Future Police Work through Social Telerobotic Communication**

In law enforcement, the stress of emergency-response scenarios can impede proper interpretation of verbal messages and emotional states, leading to rapid judgements and potential miscommunications with life or death consequences that resonate throughout families, communities, and societies for years. To this end, robots have long provided safer alternatives to direct human activity in hazardous scenarios such as explosive ordinance disposal and surveillance. However, these are relatively special cases, and a much greater share of police work relies on interpersonal communication where achieving positive outcomes requires the development of mutual relationships, empathy, and trust. Unfortunately, modern remote technologies that place law enforcement officers (LEOs) out of harm's way create situations where communication suffers from perceptions of physical and mental isolation. To address this need and protect the welfare of both officers and civilians in their encounters, a transdisciplinary team of investigators are developing a prototype teleoperated social robot to provide officers the ability to remotely communicate and interact with each other and the community across multiple verbal and non-verbal modes. Through this ground-breaking integrative research, the investigators will explore the needs, risks, and opportunities of adapting advanced social robotic technologies for use in hazardous operations in law enforcement and public safety. This novel human-technology pairing will insulate responders and other individuals from unnecessary dangers while providing remote interpersonal communication with near face-to-face quality through an integrative multimodal "Human-Robot-Human" (HRH) communication paradigm. Such advanced robotic equipment has the potential to affect ground operations, pre-event training, and operational response planning/management.

By partnering with the City of Tuscaloosa Police Department, the Center for Best Practices in Law Enforcement at Jacksonville State University, and the Alabama Peace Officer's Standards and Training Commission Law Enforcement Academy Tuscaloosa, this project addresses three important preliminary research questions: (1) What type of interface is preferred by LEOs and how much autonomy should the robot have during teleoperation? (2) What design factors should the robot assume to meet the physical demands of LEOs while enabling functionality, transparent communications, and an appropriate demeanor? (3) What actions and capabilities should the robot perform, autonomously or otherwise, to develop trust between itself and others while simultaneously enabling transparent communication between people?

In answering these questions, the investigators seek to (1) expand the research team, resources, and relationships with law enforcement and community stakeholders, (2) develop a prototype social-robotic system, and (3) conduct preliminary studies. By further offering a series of law enforcement trainings on human communication and robotics, officers are expected to improve their ability to interact with others, de-escalate situations, and understand alternative solutions to conclude traditionally hazardous scenarios. It is expected that this initial research will generate knowledge on the risks, challenges, and requirements of highly-immersive, social, human-robot systems and partnerships in future police work. This may soon provide an opportunity to drastically increase public safety by distancing officers and civilians from dangerous situations while promoting new STEM careers within policing and public service.