Rapid Operator Awareness via Mobile Robotics (ROAMR),
Customizable Human Safety using Mobile and Wearable Co-Robots
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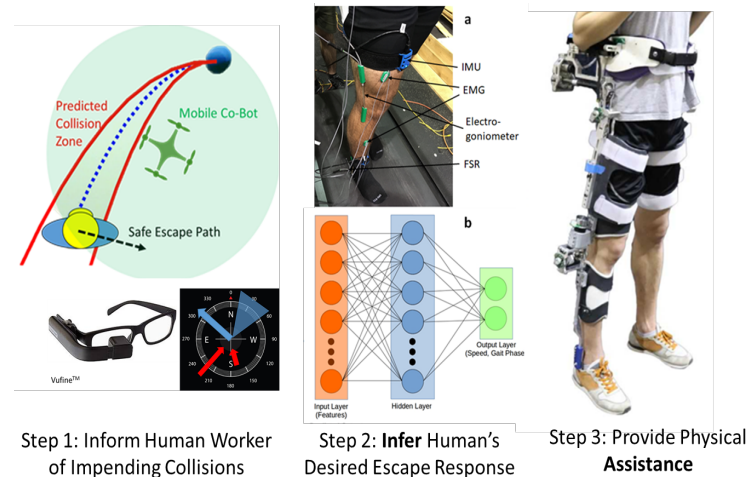
Anirban Mazumdar (PI), Aaron Young (Co-PI), Aakash Bajpai, Pooja Moolchandani, Kevin Choi,
Georgia Institute of Technology

Challenge

- How can human safety be enhanced in dynamic environments.

- Emphasis on agile behaviors.

Solution

- Leveraging mobile sensing and wearable co-robots to enhance situational awareness, gauge human intent, and physically accelerate human motions.

Step 1: Inform Human Worker of Impending Collisions

Step 2: **Infer** Human's Desired Escape Response

Step 3: Provide Physical **Assistance**

Scientific Impact

- Increase understanding of initiating rapid escape behaviors.

- Quantifying assisted and unassisted biomechanics during aggressive motions.

Broader Impact

- Enable new human-centric technologies that increase safety under diverse conditions for workers, first responders, and soldiers.

- Increase participation with a smart athletics computer game.

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Tactile-Visual

Utilizing varying cue modalities to elicit rapid escape maneuvers

Motion plans in the presence of dynamic threats

Biomechanical studies of relevant behaviors

A. Bajpai, J. Powell, A. J. Young, **A. Mazumdar**, "Enhancing Physical Human Evasion of Moving Threats Using Tactile Cues," IEEE Transactions in Haptics, December 2019. [doi: 10.1109/TOH.2019.2962664]