NRI: FND: The Robotic Rehab Gym: Specialized co-robot trainers working with multiple human trainees for optimal learning outcomes
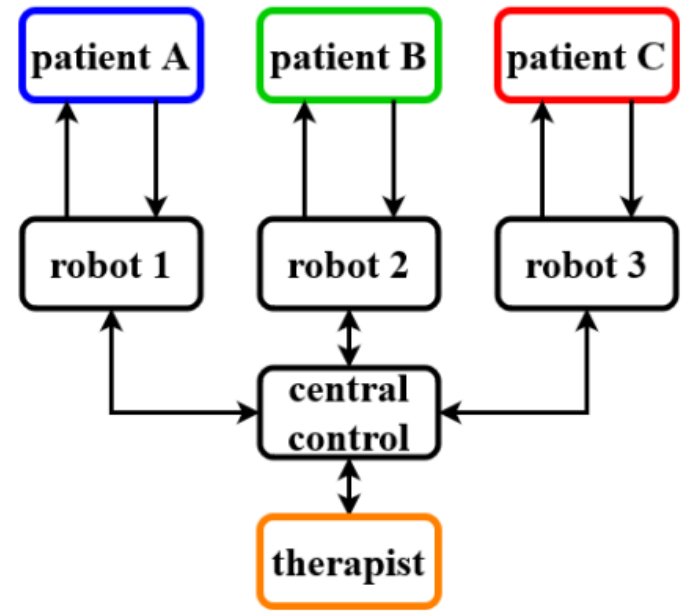
#2024813, awarded 08/24/2020. Domen V. Novak (PI), Chao Jiang (co-PI), U. of Wyoming

Challenge

- How can groups of robots efficiently teach multiple skills to groups of humans over a longer time period?

Solution

- Multi-robot task allocation to optimize training outcome
- Automated human skill assessment based on uncertain data
- Human-robot collaborative planning

Principle of robotic rehab gym. In state-of-the-art rehab robotics, a single patient-robot pair is directly supervised by a therapist. In the proposed robotic gym, multiple patients would be dynamically assigned to multiple specialized co-robots, with one therapist supervising.

Scientific Impact

- Broad contributions to multi-robot planning, robot perception, and human-robot collaboration

Broader Impact

- Robot- or agent-aided group learning beneficial in settings such as rehabilitation, sports, surgery, language therapy, education...
- Complement human expertise, reducing load on human trainers
- New courses, outreach activities