

Lil'Flo, a Socially Assistive Robot for Upper Extremity Motor Assessment and Rehabilitation via Telepresence Michael J. Sobrepera¹, Michelle J. Johnson, PhD²

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Need

- There is a shortage of rehabilitation workers in rural and resource denied areas which is expected to worsen, affecting rehab patients, such as those with cerebral palsy and stroke.
- COVID-19 presents risks for reduced access to rehab care.
- Telerehabilitation could help to alleviate shortages and reduce the burden of travel on patients and their families.
- A social robot with a humanoid form, used to augment telepresence, may enable richer telerehabilitation experiences by playing games with patients and demonstrating activities.
- Automated assessment tools could reduce the load on clinicians and deliver objective patient tracking to rehabilitation care.

Interaction Model

We envision the social humanoid robot along with the cameras acting to bridge the gaps in communication, motivation, and quality of assessment which exist over telepresence:



Pilot Testing in COVID-19

- Initial testing with clinicians, motivated by the COVID-19 pandemic, in lab environment and in 3 case study.
- Identified and addressed challenges with washability, robustness, speech volume, and interface design.
- Users informally reported the system is easy to use and appeared to enjoy using the humanoid in interactions.
- Informally, the majority of people presented with the robot have found it pleasing and entertaining.











Lil'Flo is a mobile tele-rehabilitation platform augmented by a social robot. The remote clinician is presented on a screen as the social robot interacts with patients, playing games, and demonstrating activities. Cameras collect data to perform automated assessment.



