

# **Exploring Hybrid Volitional Control of Robotic Lower-Limb Prostheses**

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#### Examples: Echo, Finite State, Phase Variable Control

#### Advantages:

- Robust/reliable ightarrow
- Non-invasive
- Wide variety of tasks ightarrow

## Limitations:

- No direct user input
- Cannot achieve unique
- gait dynamics

## Examples: Direct EMG, TMR, EEG, etc.

#### Advantages:

- Directly involves user intent
- Allows unique motions

#### Limitations:

- Mentally/physically taxing
- Accidental actuations  $\bullet$

## **Proposed Solution: Hybrid Volitional Control**

By thresholding sEMG input, users volitionally augment dynamics of base finite-state





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