

CMMI 1734449: NRI: INT: Individualized Co-Robotics

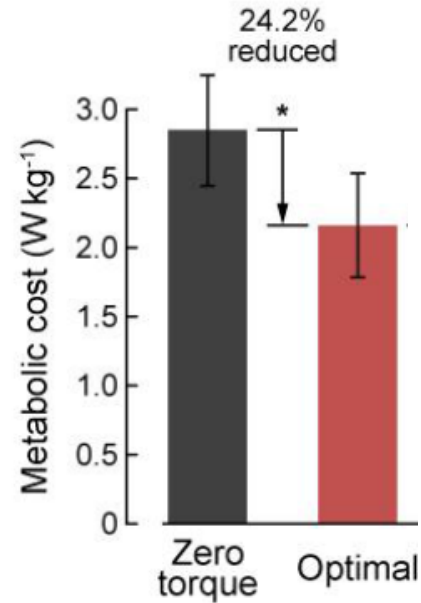
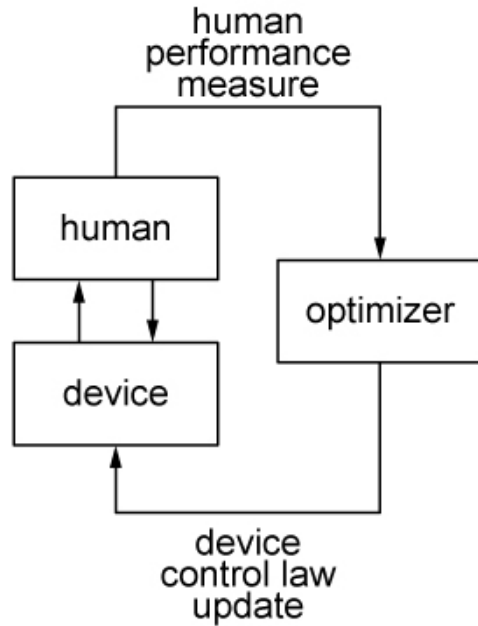


Steve Collins
Mechanical Engineering
Stanford University

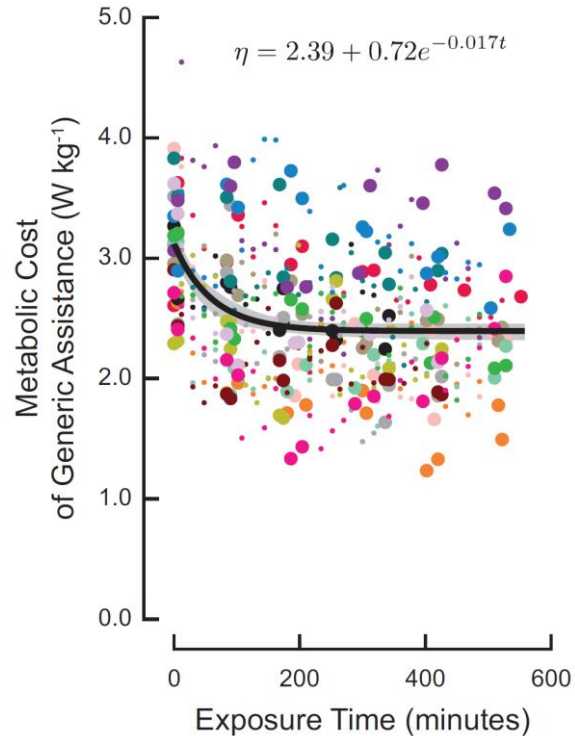


Chris Atkeson
Robotics Institute
Carnegie Mellon

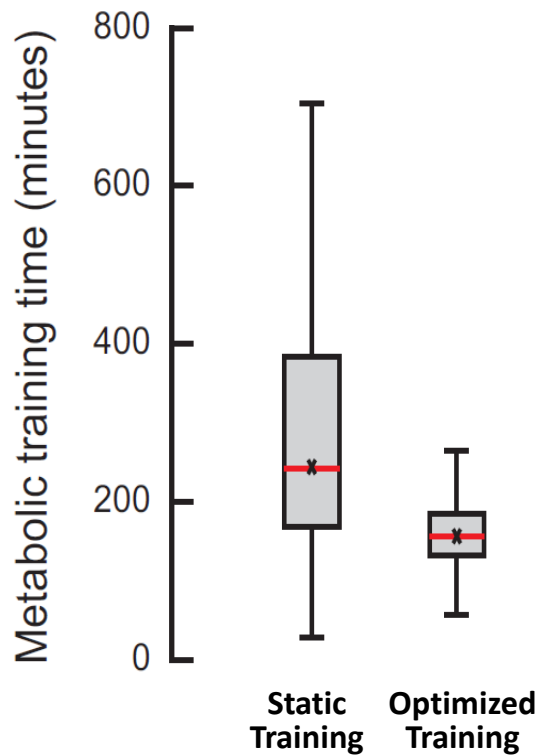
Inspiration: Human-in-the-Loop Optimization



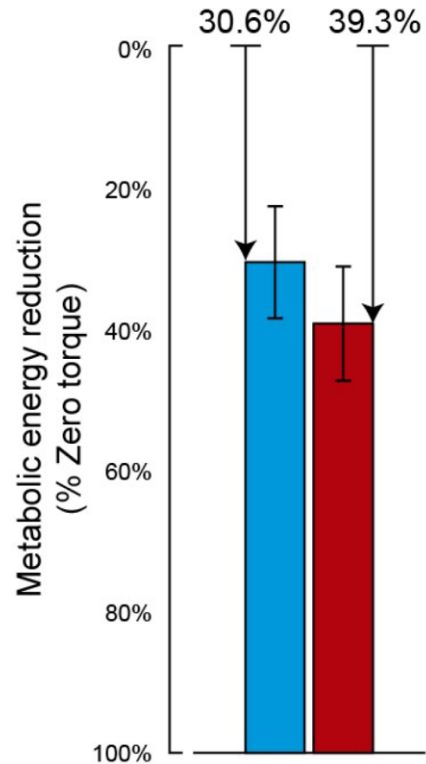
Result: Training takes longer than expected



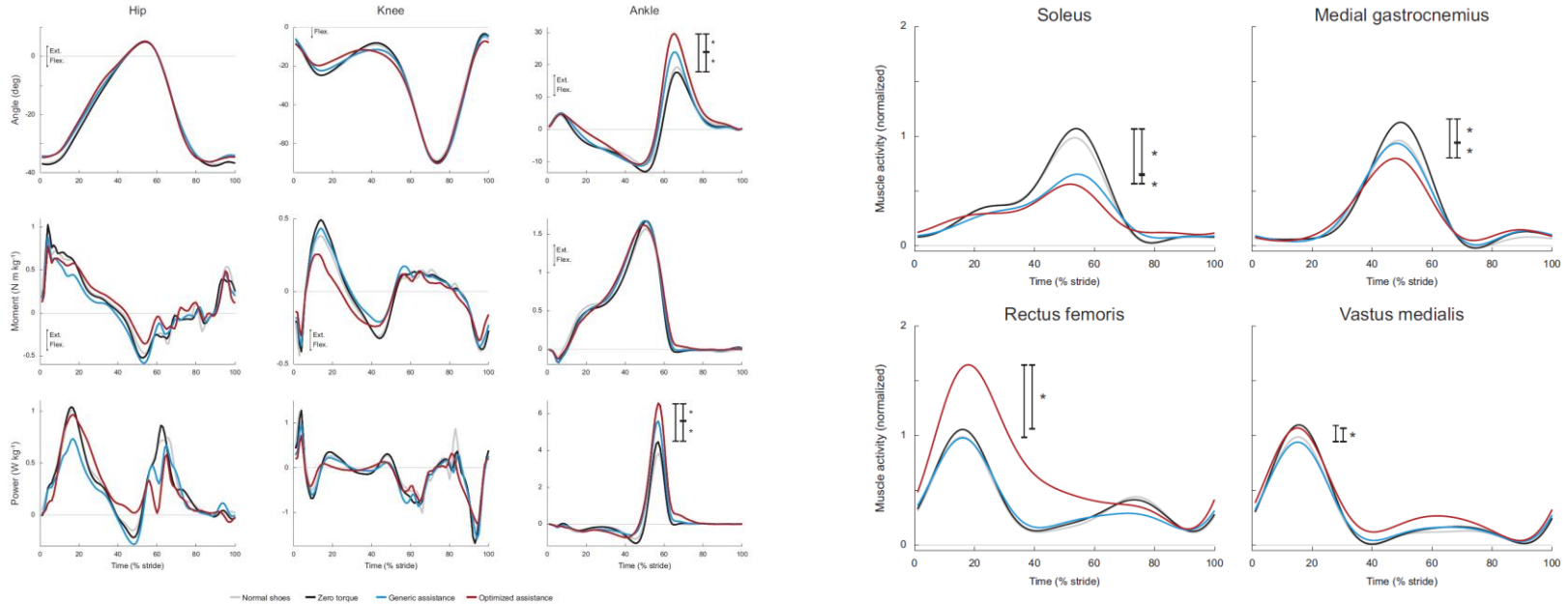
Result: Optimization speeds training



Result: Experts have large benefits



Result: Large training data set



[Poggensee & Collins, *in preparation*]

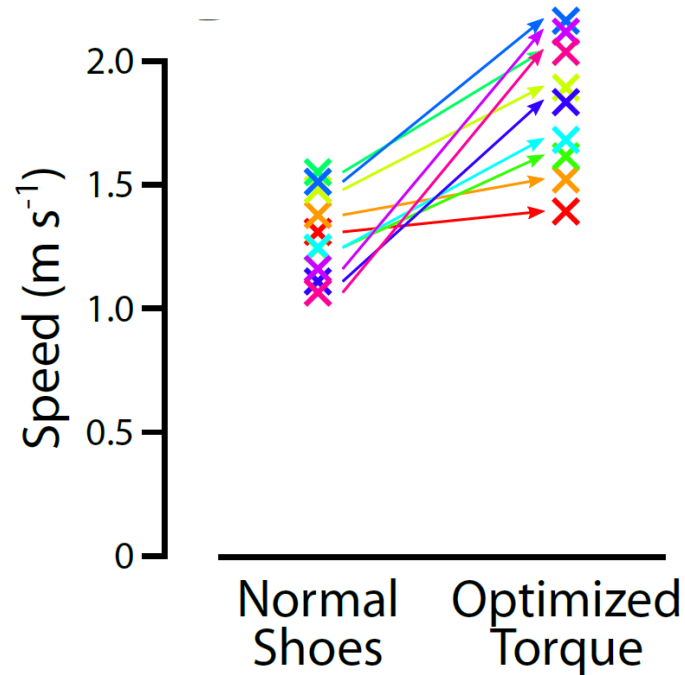
Lead: Katherine Poggensee



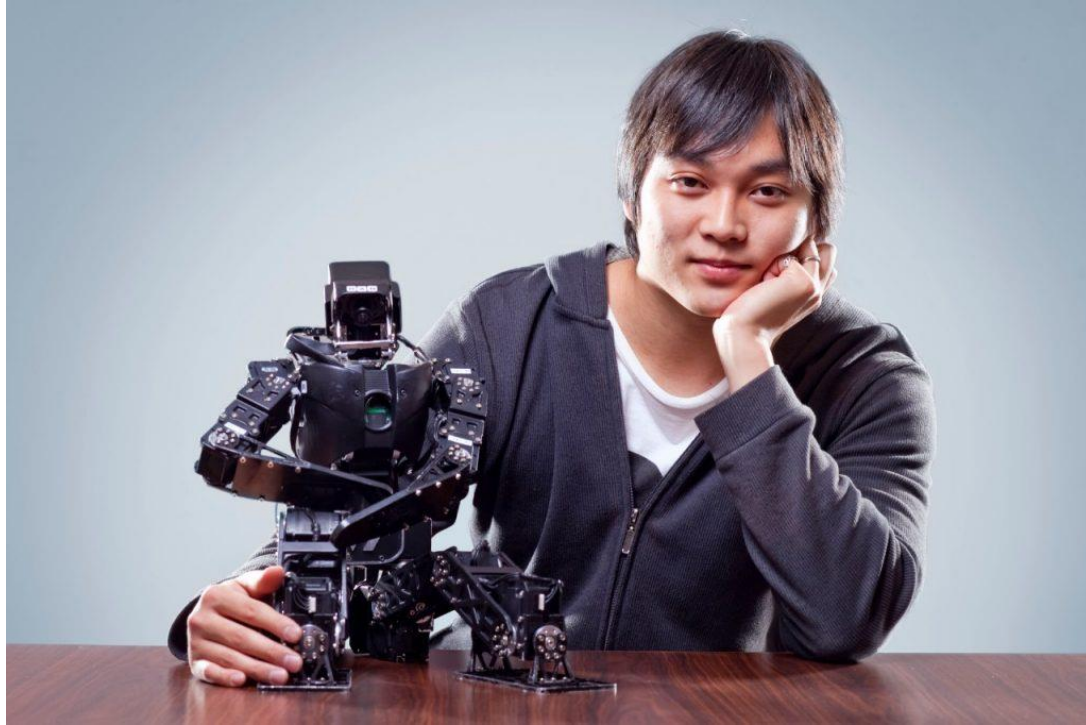
Stanford | Biomechatronics Lab

[Song & Collins, *in revision*]

Result: Large increases in speed possible



Lead: Seungmoon Song



Other Results:

New optimization algorithms: Lv, Xing et al., *in Proc. ACC*

Optimizing prosthesis function: Welker et al., *RSOS*

Prosthesis teleoperation: Welker et al., *TBME*

Navigating uneven terrain: Chiu et al., *RSOS*

Stroke asymmetry: Nguyen et al., *JNER*

Addressing balance: Tan, Raitor et al., *ICRA*

Efficient untethered devices: Krinsky et al., *ICRA*

Exploration in motor learning: Abram et al., *submitted*

Expert vs. novice biomechanics: Poggensee et al., *in preparation*

Exoskeletons for amputees: Voloshina et al., *in preparation*

Predictive simulations: Afschrift et al., *in preparation*

Outreach & Translation:



P3D: THE STANFORD PERSONAL 3D PRINTER PROGRAM



PhD Students & Postdocs:



Ge Lv



Katie
Poggensee



Seungmoon
Song



Sasha
Voloshina



Erez
Krimsky



Cara
Welker



Vince
Chiu



Guan Rong
Tan



Michael
Raitor



Sabrina
Abram



Allison
Okamura



Emma
Brunskill



Friedl
De Groot



Max
Donelan

Collaborators: