TECHNISCHE UNIVERSITÄT MÜNCHEN
Human-centered Assistive Robotics
UNIV.-PROF. DR.-ING. DONGHEUI LEE

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F O R S C H U N G S P R A X I S
for
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Comparison of Dynamics of an Ankle Based SLIP Model with a Non Ankle Based SLIP

Problem description:

Spring Loaded Inverted Pendulum are state of the art models used to understand human walking dynamics as they are computationally inexpensive. Geyer et al.[2] showed similarity in dynamics of reproduced through a SLIP model with human walking data. A SLIP model employs a fixed position for leg in stance which might affect the capability of the model to a certain extent. Maykranz et al. [1] provided the existing SLIP model with an ankle joint to allow variability in foot contact position. A comprehensive comparison of a how an ankle based SLIP differs from a non ankle based SLIP.

Work schedule:

- Develop an ankle bases conservative SLIP model.
- Comparison of ground reaction forces, COM trajectory and change in mechanical energies during a gait.

Bibliography:

[1] Maykranz D., Grimmer S., Lipfert S., and Seyfarth A. Foot function in spring mass running. *Autonome Mobile Systeme*, pages 81–88, 2009.

[2] Geyer H., Seyfarth A., and Blickhan R. Compliant leg behaviour explains basic dynamics of walking and running. *Proceedings Of The Royal Society B*, 273(1603):2861–2867, 2006.

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