

Modern Intelligent Hand Prostheses

Tobias Stocker (Betreuer: Pascal Weiner)

Seminar: Humanoid Robotics, WS 2017/18

Institute for Anthropomatics and Robotics (IAR), High Performance Humanoid Technologies (H²T)



The Task

- Research of recent developments of intelligent hand prostheses of the last 2-3 years
- Overview of important properties
 - Design / structure
 - Kinematic / dynamic characteristics
 - Sensor feedback / embedded systems
- Comparison of different prostheses
 - What do they have in common?
 - What are special features of different hands?
 - Do they provide intelligent functions?

My previous work

- Searching for papers with prosthetic hands
- Summarizing the important information for each hand
- Creating a table with important properties

Example: SSSA-MyHand and Tact

Name	Developer	Year	Mass	Size	DoFs	Actuators
MyHand	SSSA	2016	478 g	200x84x56 mm	4	3
Tact	Slide et al.	2015	350 g	200x98x27 mm	6	6

Name	Number of Fingers	Number of joints	Joints per finger	Actuator type
MyHand	5	10	2/2	Brushless DC Motor
Tact	5	11	3/2	DC Motor

Name	Integrated Actuators	Transmission System	Sensors	Finger Force	Joint Speed
MyHand	Yes	Geneva drive	Position / Force	12-31 N	160-250 °/s
Tact	Yes	Tendons		4.21 N	249.8 °/s

My future work

- Overview of important properties
 - ~~Design / structure~~
 - ~~Kinematic / dynamic characteristics~~
 - Sensor feedback / embedded systems

- Comparison of different prostheses
 - What do they have in common?
 - What are special features of different hands?
 - Do they provide intelligent functions?