Lorenzo Rapetti

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lorenzo-rapetti

Education

UNIVERSITY OF MANCHESTER, UK **JAN 2019-DEC 2022**

PhD Student in Computer Science

Thesis: *Ergonomics for Physical Human-Robot Collaboration.*

POLITECNICO DI MILANO, IT **OCT 2015-DEC 2017**

MSc in Biomedical Engineering-Electronic Technologies

Final Mark: 110/110 cum laude

Thesis: *Advanced virtual reality interface for navigated prostate biopsy.*

UNIVERSITY OF ILLINOIS AT CHICAGO, USA **JAN 2016-MAY 2017**

MSc in Bioengineering

Grade Point Average: 3.85/4.00

POLITECNICO DI MILANO, IT **SEP 2012-JUL 2015**

BSc in Biomedical Engineering

Final Mark: 110/110 cum laude

Thesis: *Virtual Reality Navigation System for Prostate Biopsy.*

Research

AMI LAB, ISTITUTO ITALIANO DI TECNOLOGIA, GENOVA, IT [website] **MAY 2018-PRESENT**

Research Fellow - PhD Student - Post-Doc

*I am working on **humanoid robot control** for **collaborative applications**, and on **human perception** from **wearable sensors**. During the years, I acted as researcher in the European Project AnDy [2018-2020], responsible of the IIT-Honda JP joint lab [2019-2021], and Scrum master of ~10 ppl team working in the ergoCub joint lab with INAIL [2021-present] .*

DEPARTMENT OF UROLOGY, UIC, USA **JAN 2017-MAY 2017**

Graduate Research Fellow

*Working at Virtual-Reality navigation system for **prostate biopsy**, and collaborating with the **UR*Lab** (Department of Urology).*

Selected Pubblications

Lorenzo Rapetti (Google Scholar)

L. Rapetti, C. Sartore, M. Elobaid, Y. Tirupachuri, F. Draicchio, T. Kawakami, T. Yoshiike, D. Pucci
A Control Approach for Human-Robot Ergonomic Payload Lifting
IEEE International Conference on Robotics and Automation (ICRA). 2023.

M. Elobaid, G. Romualdi, G. Nava, L.Rapetti, H. Awallada, D. Pucci
Online Non-linear Centroidal MPC for Humanoid Robot Payload Carrying
IEEE International Conference on Robotics and Automation (ICRA). 2023.

C. Sartore, L. Rapetti, D. Pucci
Optimization of Humanoid Robot Designs for Human-Robot Ergonomic Payload Lifting
IEEE-RAS International Conference on Humanoid Robots (Humanoids). Okinawa, Japan. 2022.

P. Ramadoss, L. Rapetti, Y. Tirupachuri, R. Grieco, G. Milani, E. Valli, S. Dafarra, S. Traversaro, D. Pucci
Whole-Body Human Kinematics Estimation using Dynamical Inverse Kinematics and Contact-Aided Lie Group Kalman Filter
IEEE-RAS International Conference on Humanoid Robots (Humanoids). Okinawa, Japan. 2022.

C. Latella, Y. Tirupachuri, L. Tagliapietra, L. Rapetti, B. Schirrmeister, J. Bornmann, D. Gorjan, J. Čamernik, P. Maurice, L. Fritzsche, J. Gonzalez, S. Ivaldi, J. Babič, F. Nori, D. Pucci
Analysis of Human Whole-body Joint Torques during Overhead Work with a Passive Exoskeleton
IEEE Transactions on Human-Machine Systems. 2021.

L. Rapetti, Y. Tirupachuri, A. Ranavolo, T. Kawakami, T. Yoshiike, D. Pucci
Shared Control of Robot-Robot Collaborative Lifting with Agent Postural and Force Ergonomic Optimization
IEEE International Conference on Robotics and Automation (ICRA). 2021.

L. Rapetti, Y. Tirupachuri, K. Darvish, S. Dafarra, G. Nava, C. Latella, D. Pucci
Model-based real-time motion tracking using dynamical inverse kinematics
MDPI Algorithms. 2020.

I. Sorrentino, F. J. Andrade Chavez, C. Latella, L. Fiorio, S. Traversaro, L. Rapetti, Y. Tirupachuri, N. Guedelha, M. Maggiali, S. Dussoni, G. Metta, D. Pucci
A novel sensorised insole for sensing feet pressure distributions
MDPI Sensors. 2020.

K. Darvish, Y. Tirupachuri, G. Romualdi, L. Rapetti, D. Ferigo, F. J. Andrade Chavez, D. Pucci
Whole-Body Geometric Retargeting for Humanoid Robots
IEEE-RAS International Conference on Humanoid Robots (Humanoids). Toronto, Canada. 2019.

Y. Tirupachuri, G. Nava, C. Latella, D. Ferigo, L. Rapetti, L. Tagliapietra, F. Nori, D. Pucci
Towards Partner-Aware Humanoid Robot Control Under Physical Interactions
SAI Intelligent Systems Conference (IntelliSys). London, United Kingdom. 2019.

C. Latella, S. Traversaro, D. Ferigo, Y. Tirupachuri, L. Rapetti, F. J. Andrade Chavez, F. Nori, D. Pucci
Simultaneous Floating-Base Estimation of Human Kinematics and Joint Torques
MDPI Sensors. 2019.

Code

github.com/lrapetti

Contributor to public code in Robotology and ami-iit organizations, and main maintainer of the following:

human-dynamics-estimation: collection of modules for the online estimation of human kinematics and dynamics from wearable sensors.

wearables: interface library for streaming and collecting wearable sensors data.

More

Awards and Fellowship

ANA Avatar Xprize Finalist Team [website]
iCub Team. Fall 2022.

Best Student Paper Award
SAI Intelligent Systems Conference (IntelliSys). London, United Kingdom. 2019.

Tuition waiver for high academic performance
Politecnico di Milano. Achieved on Accademic Years: 2013/2014, 2014/2015, 2015/2016, 2016/2017