Editor's Note:
It is our pleasure to bring you the most recent newsletter of the Technical Committee on Mobile Manipulation. The newsletter is a brief snapshot of the ongoing projects and opportunities in the area. If you would like your announcement to appear in the next newsletter, or you have some suggestion/comment for the TC, please do not hesitate to contact one of the co-chairs: Mehmet Dogar (m.r.dogar@leeds.ac.uk), Nikolaus Correll (nikolaus.correll@colorado.edu), or Máximo Roa (maximo.roa@dlr.de).

First things first: Starting in Summer 2017, the TC on Mobile Manipulation has two new co-chairs. Dmitry Berenson, who served as co-chair since 2012, has taken a step aside to focus on his new position at University of Michigan. Also, Wes Huang, serving as co-chair since 2014, has left the Mobile Manipulation world to work on autonomous vehicles. Please join me in thanking them for their great contribution to the TC. Nikolaus Correll, professor at University of Colorado, and Mehmet Dogar, professor at University of Leeds, have joined the TC as new co-chairs. We have already some ideas on how to push forward activities in this field…stay tuned!

Now, the contents….Thanks to all the contributors of this issue!

Technical Committee on Mobile Manipulation Newsletter (July 2017)

CONTENTS

---

1. NEW ROBOT VIDEOS

C-LEARN: Learning Geometric Constraints from Demonstrations for Multi-Step Manipulation in Shared Autonomy
http://people.csail.mit.edu/cdarpino/CLEARN/
This work present a method for learning geometric constraints from demonstrations for manipulation planning. It was highlighted at MIT News, Science Magazine, Wired, CNN, among others.
(Thanks to Claudia Pérez D'Arpino)

Final demonstration of the EU project Stamina
https://www.youtube.com/watch?v=OInHDueqnQ
The video shows experimental results of the final test sprint of the EU project STAMINA. The test was carried out at the PSA plant in Rennes, France.
Website of the project:
http://stamina-robot.eu/
(Thanks to Volker Krüger)

Learning a visuomotor controller for real world robotic grasping using easily simulated depth images
https://www.youtube.com/watch?v=WkVM3dRWWN8

This video demonstrates the results of our approach of dynamically grasping moving objects in clutter. Our controller uses a neural net trained on simulated depth images to predict nearby good grasps. Unlike previous one-shot methods, our closed loop controller can dynamically track grasps even when the object moves. We use a depth sensor mounted on the gripper. The direction to a nearby predicted good grasp is shown as a green line in the processed depth image. The controller moves the gripper such that a good grasp is centered to the image, then executes the grasp.
Accompanying paper:
https://arxiv.org/abs/1706.04652
(Thanks to Ulrich Viereck)

Demonstration of the Innosort project, by DTI (Danish Technological Institute)
https://www.youtube.com/watch?v=AVTVkJEeSAs

---

2. NEW PROJECT WEBSITES

Badger: RoBot for Autonomous unDerGround trenchless opERations, mapping and navigation
The goal of the project is the design and development of the BADGER autonomous underground robotic system that will be able to drill, maneuver, localize, map and navigate in the underground space, and which will be equipped with tools for constructing horizontal and vertical networks of stable bores and pipelines.
http://www.badger-robotics.eu/badger/

CoMRAde :A Collaborative Mobile Robot Arm that can Learn Impedance Critical Tasks from Humans
The main objective of this project is to develop a mobile manipulator that can effectively learn impedance critical tasks by means of physical interactions with a human, and acquire human's abilities via human-to-robot skill transfer for subsequent autonomous task execution.
http://comrade.ozyegin.edu.tr/index.html
(Thanks to Barkan Ugurlu)

Euneca: Enhanced Human Robot cooperation in Cabin Assembly tasks
The EURECA project is devoted to innovate in aircraft cabin installation procedures by proposing a multi-robot framework assisting human operator(s) inside the working scene. In particular, a mobile platform equipped by a light-weight manipulator will be a key element in order to execute both autonomous and cooperative manipulation tasks to enhance the complete installation process.
http://www.cleansky-eureca.eu/
(Thanks to Loris Roveda)

Thomas: Mobile dual arm robotic workers with embedded cognition for hybrid and dynamically reconfigurable manufacturing systems
THOMAS aspires to create a dynamically reconfigurable shopfloor utilizing autonomous, mobile dual arm robots that are able to perceive their environment and through reasoning, cooperate with each other and with other production resources including human operators.
http://www.thomas-project.eu
(Thanks to George Michalos)

MUSHA: MUltifunctional Smart Hands
MUltifunctional Smart HAnds: novel insight for new technological insight for mini-invasive surgical tools and artificial anthropomorphic hands
http://www.musha.unina.it/index.php

---

3. NEW CODE RELEASES

Incremental Caging Graph Search Algorithm
https://codeocean.com/2017/06/07/incremental-caging-graph-search-algorithm/code
Code accompanying the paper "Caging Polygonal Objects Using Equilateral Three-Finger Hands", published in RA-L, with Hallel Bunis, Elon Rimon, Yoav Golan and Amir Shapiro as authors.
A video is accompanying the paper in IEEE Xplore
http://ieeexplore.ieee.org/document/7812670
(Thanks to Hallel Bunis)

Grasp Pose detection (GPD)
https://github.com/atenpas/gpd
This package detects 6-DOF grasp poses for a 2-finger grasp (e.g. a parallel jaw gripper) in 3D point clouds. Grasp pose detection consists of three steps: sampling a large number of grasp candidates, classifying these candidates as viable grasps or not, and clustering viable grasps which are geometrically similar.
Accompanying paper:
https://arxiv.org/abs/1603.01564
Accompanying video:
https://www.youtube.com/watch?v=y7z-Yn1PQNI
(Thanks to Andreas ten Pas)

KST Kuka Sunrise Toolbox for Matlab
https://github.com/Modi1987/KST-Kuka-Sunrise-Toolbox
A Toolbox used to control KUKA iiwa 7 R 800 robot from an external computer using Matlab, such that no knowledge about programming the industrial manipulator is required. The KST contains functionalities for: networking, real-time control, point-to-point motion, setters and getters of parameters, physical interaction.

---

4. UPCOMING WORKSHOPS

If you are attending IROS in Vancouver, you might be interested in the following workshops:
Learning for Collaborative Robotics: Enabling Flexible, Redeployable and Agile Industrial Applications, Sept 24
http://www.mobilemanipulation.org/cobots-IROS-2017/
Agile Robotics for Industrial Automation Competition (ARIAC) Workshop, Sept 24
https://www.nist.gov/el/intelligent-systems-division-73500/agile-robotics-industrial-automation-competition-ariac
Verification of Autonomous Systems Workshop, Sept 24
http://pwp.gatech.edu/iros2017-vasw/
Development of Benchmarking Protocols for Robot Manipulation, Sept 24
http://ycbbenchmarks.org/IROS2017workshop.html
Assistance and Service Robotics in a Human Environment
http://www.lissi.fr/iros-ar2017/doku.php, Sept 28
Complex Collaborative Systems
http://theairlab.org/iros2017_workshop/index.html, Sept 28

And the following IROS workshops are still open for submissions:

Human-Robot Interaction in Collaborative Manufacturing Environments, Sept 24
http://caris.mech.ubc.ca/iros-2017-workshop/
Deadline for paper contributions: August 11

Introspective methods for reliable autonomy, Sept 24
http://aass.oru.se/Agora/IROS2017_Introspection/
Deadline for paper contributions: August 6

Human in-the-loop robotic manipulation: on the influence of the human role, Sept 24
http://h2020sarafun.eu/iros2017_hr/
Deadline for paper contributions: August 15

Joint Learning in Human-Robot Collaboration
https://aiweb.techfak.uni-bielefeld.de/iros2017_workshop_shared_autonomy/, Sept 28
Deadline for paper contributions: August 20

Frontiers in contact-rich robotic interaction
https://contactrobotics.wordpress.com/, Sept 28
Deadline for poster contributions: August 15

Synergies between learning and interaction
https://sites.google.com/view/iros17sbli, Sept 28
Deadline for abstract/paper contributions: August 8

---

5. POSITIONS

Roboception
Roboception develops software and hardware products for real-time perception and localisation of robotic systems. Customer-specific software products for a variety of hardware platforms are developed in compliance with the customer's individual plug-and-produce requirements.
Different positions are open, including
Software developer/Expert for grasping and manipulation
http://roboception.com/en/job-offers/software-developer_expert-for-grasping-and-manipulation/
Software developer for Robotic Applications
http://roboception.com/en/job-offers/software-developer-for-robotic-applications/

Shadow Robotics
Ever wanted to work for a growing robotics company in the heart of London? Now's your chance! We're looking for two people to join us in the roles of Events Assistant and Junior Project Manager.
http://www.shadowrobot.com/were-hiring/

---

6. ANNOUNCEMENTS

IEEE Summer School On Singularities Of Mechanisms And Robotic Manipulators
Sep. 18-22, 2017, Linz, Austria
https://robotsingularities.org/

Amazon Picking Challenge 2017
The 2017 Edition of the APC was held in Nagoya, Japan, July 27-30
Results: https://www.amazonrobotics.com/#/roboticschallenge/results

Latest robots from Robotnik
RB-Sherpa, mobile robot for indoors and outdoors applications
http://www.robotnik.eu/manipulators/rb-one/

Robobusiness
http://www.robobusiness.com/
Sept 27-28, Santa Clara, USA

Shadow Robot company opens new office in Madrid
http://www.shadowrobot.com/shadow-to-open-new-office/

Two RA-L (Robotics and Automation Letters) special issues have open calls:
Control and Motion Planning for Nonprehensile Dynamic Manipulation
http://www.ieee-ras.org/publications/ra-l/special-issues/control-and-motion-planning-for-nonprehensile-dynamic-manipulation
Paper submission until August 6
Learning and Control for Autonomous Manipulation Systems: the Role of Dimensionality Reduction
http://www.ieee-ras.org/publications/ra-l/special-issues/learning-and-control-for-autonomous-manipulation-systems-the-role-of-dimensionality-reduction
Paper submission until October 15

RAM (Robotics and Automation Magazine) special issue on Soft Robotics and Morphological Computation
http://www.ieee-ras.org/publications/ram/ram-special-issues/special-issue-on-soft-robotics-and-morphological-computation
Paper submission until November 10

Entrepreneurship Forum and Start-up Competition@IROS 2017
The event is intended to inspire, educate, enable, and empower researchers, students, young professionals, and anyone else who has the 'start-up bug' in starting companies of their own but is not sure of how to go about it
http://iros2017.org/program/forums/efsc
Deadline for applications: Aug 11

Remember you can use our webpage, http://mobilemanipulation.org/ to follow the most recent information from the TC. Also, feel free to join the TC on:
Linkedin: https://www.linkedin.com/groups/6591574
Facebook: https://www.facebook.com/groups/246281928815732/
Mailing list: http://mobilemanipulation.org/index.php/contact
And don't hesitate to use these channels to announce your results, workshops, videos, code releases and news of potential interest to the community.