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: Dmitry Berenson (dberenson@cs.wpi.edu), Wes Huang (wes.huang@alumni.cmu.edu), or Máximo Roa (maximo.roa@dlr.de).
Don't forget to use our webpage, http://mobilemanipulation.org/ to follow the most recent information from the TC. Also, feel free to join the TC on:
Linkedin: http://www.linkedin.com/groups/IEEE-RAS-Technical-Committee-on-6591574?home=&gid=6591574&trk=anet_ug_hm
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.
Thanks to all the contributors of this issue!

Technical Committee on Mobile Manipulation Newsletter (May 2016)

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1. NEW ROBOT VIDEOS

Tiago Robot doing manipulation tests
This video shows manipulation tests performed by TIAGo, the mobile manipulator developed by PAL Robotics. All the manipulation tasks were done with human tele-operation using PAL's Whole Body Control software suite with a simple gamepad.
https://www.youtube.com/watch?v=0f4kyT9vRpw
(Thanks to Judith Viladomat – PAL Robotics)

Autonomous grasping of items arranged in clusters
So far, autonomous order picking (commissioning) systems have not been able to meet the stringent demands regarding speed, safety and accuracy of real-world warehouse automation, resulting in reliance on human workers. In this work we target the next step in autonomous robot commissioning: automatizing the currently manual order picking procedure. To this end, we investigate the use case of autonomous picking and palletizing with a dedicated research platform and discuss lessons learned during testing in simplified warehouse settings.
http://www.aass.oru.se/Research/Learning/publications/2016/Krug_etal_2016-RAL-The_Next_Step_in_Robot_Commissioning_Picking_and_Palletizing.pdf ,
Video describing the manipulation system
https://youtu.be/p8rjaO_O8io
Video with grasping experiments
https://youtu.be/cmIqKq8gvEI

(Thanks to Todor Stoyanov – Orebro University)

Final demo of the project Valeri - Validation of Advanced, Collaborative Robotics for Industrial Applications
The Valeri Project for mobile manipulation in Industrial settings for Aerospace manufacturing (http://www.valeri-project.eu/) successfully concluded. Several videos regarding the project are available now
Introductory video:
https://www.youtube.com/watch?feature=player_embedded&v=bvzvyX7Xn-U
Final Demo video:
https://www.youtube.com/watch?v=e9AXPChW860
Nullspace motions for mobile manipulator
https://kuka.sharefile.eu/d-s573a4965b7f4bcf8
(Thanks to Shashank Sharma – KUKA Roboter)

Application of the GPU-Voxels framework
https://youtu.be/tpUX-8if1pY
Precise and flexible safety monitoring of a shared Human-Robot-Workspace: This video shows the advantages of a workspace monitoring that explicitly only supervises the volume which will be crossed by a robot motion. Compared to approaches with light- or laser-safety fields, this allows a human worker to cooperate much closer with a robot without constantly triggering a safety stop. The voxel-based collision prediction can evaluate more than 200 alternative trajectories simultaneously for safe collision free execution and can also switch between them without time delay, if required. The robot motions are partitioned in more than 200 subsections/slices, so that the exact position and the point in time of an upcoming collision can be derived. That way the controller can decide if enough time remains to plan an evade trajectory or to safely stop the robot. The algorithms are executed highly parallelized on a GPU, whose computing power is sufficient to monitor a 2x2x2 meter workspace with up to four 3D cameras at a resolution of 2 cm^3 and at 30 safety checks per second. For further information visit: www.gpu-voxels.org
(Thanks to Andreas Hermann – FZI)

Robot Motion Planning for Tasks Using Learned Virtual Landmarks:
The Baxter robot learns to autonomously pour liquids and transfer powder using a spoon, and employs a closed-loop sampling-based motion planner that uses a learned task model and generates collision-free plans that react to the motions of relevant landmarks in the environment.
https://www.youtube.com/watch?v=QaiRBRwE3Lo
(Thanks to Chris Bowen and Ron Alterovitz – University of North Carolina at Chapel Hill)

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2. NEW PROJECT WEBSITES

Vinbot – Powerful Precision Viticulture tool to Break Traditional yield estimation in Vineyards
http://vinbot.eu/
VINBOT is an all-terrain autonomous mobile robot with a set of sensors capable of capturing and analysing vineyard images and 3D data by means of cloud computing applications, to determine the yield of vineyards and to share information with the winegrowers.
VINBOT responds to a need to boost the quality of European wines by implementing precision viticulture (PV) to estimate the yield (amount of fruit per square metre of vine area: kg/m2).
(Thanks to Maria Benitez – Robotnik)

Robo-Spect
http://www.robo-spect.eu/
ROBO-SPECT, driven by the tunnel inspection industry, adapts and integrates recent research results in intelligent control in robotics, computer vision tailored with semisupervised and active continuous learning and sensing, in an innovative, integrated, robotic system that automatically scans the intrados for potential defects on the surface and detects and measures radial deformation in the cross-section, distance between parallel cracks, cracks and open joints that impact tunnel stability, with mm accuracies. This permits, in one pass, both the inspection and structural assessment of tunnels. Intelligent control and robotics tools are interwoven to set an automatic robotic arm manipulation and an autonomous vehicle navigation so as to minimize humans' interaction. This way, the structural condition and safety of a tunnel is assessed automatically, reliably and speedily.
(Thanks to Maria Benitez – Robotnik)

ColRobot - Collaborative Robotics for Assembly and Kitting in Smart Manufacturing
https://www.colrobot.eu/about-colrobot
ColRobot combines cutting-edge European robot technology and end-user requirements for assembly processes to create an integrated system for collaborative robotics in which a mobile manipulator acts as a "third hand" by delivering kits, tools, parts, and holding work pieces while the operator works on it. Humans will cognitively and physically interact with ColRobot robots using gestures, touch commands and demonstrations. The robot will be able to navigate autonomously in the factory floor to pick up the required parts and tools, and prepare kits for assembly. A safety system that pushes the limits of standardization in collaborative robotics supervises the process. Two use cases in automobile and aerospace industry will be implemented and validated in real world operational environments
(Thanks to Pedro Neto – University of Coimbra)

RobDream - Optimising Robot Performance while Dreaming
http://robdream.eu/
Imagine the implementation of mobile robotics in your production scenario would work this way. The mobile manipulation system you bought is equipped with state-of-the-art techniques for navigation, perception and manipulation. You can set up your application in just a few simple steps and the built- in-intelligence does all the rest. Even if the first solution of your robot application may not show optimal results, its performance increases after each shift, without tuning or repeated visits of your system integrator. The depicted scenario is not a dream; it is the envisioned goal of the RobDREAM action, where leading scientists and technology providers will help robots improving their daily work over night.

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3. NEW CODE RELEASES

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4. UPCOMING WORKSHOPS

If you are attending ICRA in Stockholm, you might be interested in the following workshops:
Exploiting Contact and Dynamics in Manipulation, May 16

http://ecexploit_ws_icra2016.diism.unisi.it/
Task-driven Perceptual Representations: Sensing, Planning and Control under Resource Constraints, May 16
http://task-driven-representations.mit.edu/
Aerial Robotics Manipulation: from Simulation to Real-Life, May 20
http://www.aerial-manipulation-workshop.com/
Verification of Autonomous Systems, May 20
http://www.robotistry.org/vaswg/VerificationWorkshop.html
Grasping and Manipulation Datasets, May 20
http://rhgm.org/activities/workshopicra16/

And two RSS workshops have currently an open call for contributions

Workshop on Recent Advances in Planning and Manipulation for Industrial Robots, June 18
https://sites.google.com/site/rss16irt/
Deadline for contributing extended abstracts (up to 4 pages): May 20

Workshop on Bootstrapping manipulation Skills
http://www.bootstrapping-manipulation.com/
Deadline for contributing extended abstracts (up to 2 pages): May 26

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5. POSITIONS

Dorabot
Dorabot, Inc. (www.dorabot.com) provides research scientist position as well as robot engineer position (and internships on both), including but not limited to: grasping, robot arm motion planning, 3D perception, navigation, multi-agent collaboration... etc. We are looking for talented electric engineers, mechanical engineers, and software engineers. The list of open positions is presented in
http://www.dorabot.com/jobs/
(Thanks to Hao Zhang from Dorabot)

Roboception
Roboception develops software and hardware products for real-time perception and localisation of robotic systems. The name Roboception is comprised of the words “Robotics” and “Perception”. Roboception offers innovative navigation, real-time perception and manipulation solutions for 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/

PhD Openings in Humanoids and Human Centred Mechatronics
Department of Advanced Robotics - Istituto Italiano di Tecnologia (IIT)
https://www.iit.it/phd-school-docs/106-phd-program-in-biorob-advanced-and-humanoid-robotics-2016-32o-ciclo/file

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6. ANNOUNCEMENTS

Automatica 2016: June 21-24, Munich, Germany
http://www.automatica-munich.com/
The 7th International Trade Fair for Automation and Mechatronics

Robotiq releases new force torque sensors
http://robotiq.com/products/robotics-force-torque-sensor/
Robotiq released two models of force torque sensors, FT 150 and FT 300, to give your robot the sense of touch.

Franka: New collaborative manipulator
https://www.franka.de/
KBee presented at Hannover Messe 2016 a new collaborative manipulator, with a price of 9900 Euros. Available for pre-order now!

Latest robots from Robotnik
Mobile manipulator RB-1
http://www.robotnik.eu/manipulators/rb-one/
RB-1 Base
http://www.robotnik.eu/mobile-robots/rb-1-base/
Mobile manipulator XL-Mico
http://www.robotnik.eu/manipulators/xl-mico/

KUKA Innovation Award 2016
https://www.kuka.com/en-DE/Press/Event%20calendar/Hannover%20Fair%202016/kuka-innovation-award
The 2016 KUKA Innovation Award has been awarded to the research team CoSTAR of Johns Hopkins University in Baltimore. The price was granted at Hanover Fair 2016.

Amazon Picking Challenge 2016
http://robocup2016.org/en/events/amazon-picking-challenge/
The second edition of the Amazon Picking Challenge will be held at the Robocup 2016, June 30 – July 3 2016 in Leipzig, Germany.

Robobusiness Europe
http://www.robobusiness.eu/rb/robobusiness-europe-2016/
June 1 -3 2016, Odense, Denmark