Editor's Note:

It is my 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: Oliver Brock (oliver.brock@tu-berlin.de), Dmitry Berenson (dberenson@cs.wpi.edu), or Maximo 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 (April 2014)

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1. NEW ROBOT VIDEOS

Robot learning background knowledge for manipulation of articulated objects in simulation, using relational learning (accompanying an ICRA submission):

https://www.youtube.com/watch?v=5On-tDeu2ic&list=UU4Vgg1DuTldG9N8PHB9sMrw

(Thanks to Roberto Martin Martin - TU Berlin)

"Sensor-Based, Task-Constrained Motion Generation Under Uncertainty." Authors: Arne Sieverling, Nicolas Kuhnen and Oliver Brock (Accompanying an ICRA submission)

https://www.youtube.com/watch?v=netNfOyXjtk&list=UU4Vgg1DuTldG9N8PHB9sMrw

(Thanks to Roberto Martin Martin – TU Berlin)

Videos associated with fast reaching in clutter: The significance of the following videos is that the robot is keeping contact forces low even though it is quickly reaching into the unknown using only haptic sensing. It does so by using model predictive control (MPC) with a model that makes predictions about potential collision forces and changes to the current contact forces.

Autonomous reaching to locations in artificial foliage: http://youtu.be/U72Is4pBoIY

Teleoperated reaching into a canvas bag: http://youtu.be/OtpWnZ2gpPg

Autonomous removal of keys from a known location: http://youtu.be/JgIAHySBWtM

Recent popular media coverage of our work in this area: http://in.reuters.com/video/2013/12/31/a-sense-of-touch-makes-robots-more-human?videoId=276270943

(Thanks to Charles C. Kemp – Georgia Tech)

Regrasping Objects using Extrinsic Dexterity: We demonstrate that in-hand manipulation is possible with a hand dramatically simpler than typical dexterous hands. The key is to exploit the motions of the arm, object inertia, gravity, and external contacts: extrinsic dexterity. The video showcases a repertoire of regrasps developed for a simple gripper (MLab Hand) and presents one of the sequences of regrasps designed to explore broader manipulation capability by connecting different regrasps. All regrasp actions shown in the video are manually scripted.
http://youtu.be/WAPgjZCI1gI
Corresponding ICRA submission can be found in: http://www.cs.cmu.edu/~albertor/pdfs/nc-icra14-final.pdf

(Thanks to Nikhil Narsingh Chavan Dafle - MIT)

DoRo robot (Domestic Robot) bringing a cereal box to a user:
https://www.youtube.com/watch?v=yq2ZkGcL3Os

The DoRo robot is part of the Robot-Era European project (http://www.robot-era.eu/).

(Thanks to Alessandro Manzi - Scuola Superiore Sant'Anna)

Results of the EU project VALERIE - Mobile manipulators for aerospace production

http://www.valeri-project.eu/results/videos/

(Thanks to Jose Saenz – Fraunhofer IFF)

Results of the EU project PACMAN – Probabilistic and compositional representations for object manipulation

https://www.youtube.com/channel/UCC-u5KVRVpFCsvb2az_bS7A

(Thanks to Jeremy Wyatt – U. Birmingham)

Video showing the performance of an algorithm to localize handles in 3D point clouds for robot grasping and manipulation:
http://www.ccs.neu.edu/home/atp/videos/handle_demo.webm
(Thanks to Andreas ten Pas – Northeastern University)

Valve turning for the DARPA Robotics Challenge (work of WPI, part of team DRC-Hubo):

https://www.youtube.com/watch?v=JX8lp8lze00

(Thanks to Dmitry Berenson – WPI)

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2. NEW PROJECT WEBSITES

EuRoC: The European manufacturing industry needs competitive solutions to keep global leadership in products and services. Exploiting synergies across application experts, technology suppliers, system integrators and service providers will speed up the process of bringing innovative technologies from research labs to industrial end-users. As an enabler in this context, the EuRoC initiative proposes to launch three industry-relevant challenges: Reconfigurable Interactive Manufacturing Cell (RIMC), Shop Floor Logistics and Manipulation (SFLM), Plant Servicing and Inspection (PSI). http://www.euroc-project.eu

(Thanks to Niels Jepsen - Innocentive)

STAMINA: Sustainable and Reliable Robotics for Part Handling in Manufacturing Automation.
http://stamina-robot.eu

(Thanks to Germano Veiga – INESC Porto)

PACMAN: Probabilistic and compositional representations for object manipulation.

http://www.pacman-project.eu/

(Thanks to Jeremy Wyatt – U. Birmingham)

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3. NEW CODE RELEASES

An approach to GPU-based collision detection for robotic trajectory planning and real time motion monitoring is presented on http://www.gpu-voxels.org. Please find details and videos on our website. The software will be available as OpenSource this summer.
(Thanks to Andreas Hermann - FZI)

An algorithm to localize handles in 3D point clouds for robot grasping and manipulation
https://github.com/atenpas/handle_detector
(Thanks to Andreas ten Pas – Northeastern University)

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4. UPCOMING WORKSHOPS

GPU based Voxel-Collision-Detection for Robot Motion Planning: Half-day tutorial on July 15th at IAS13 (13th Int. Conf. on Intelligent Autonomous Systems), to be held in Padova, Italy, 15-19 July 2014.
http://gpu-voxels.org/tutorials/
(Thanks to Andreas Hermann - FZI)

1st International Workshop on Intelligent Robot Assistants (IRAS): Full-day workshop on July 15th during IAS13 (13th Int. Conf. on Intelligent Autonomous Systems), to be held in Padova, Italy, 15-19 July 2014. Deadline for abstract submission: April 20th.

http://iras2014.aau.dk/.

3rd Workshop on Robots in Clutter: Perception and Interaction in Clutter: workshop accepted for IROS 2014, to be held in Chicago, USA.

http://workshops.acin.tuwien.ac.at/clutter2014/index.html

(Thanks to Michael Zillich – TU Wien)

Workshop on Human versus Robot Grasping and Manipulation: Full-day workshop on July 12th, at RSS 2014, to be held in Berkeley, USA. Deadline for extended abstract submission: May 16th.

http://mobilemanipulation.org/rss2014/

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5. ANNOUNCEMENTS

The mobile manipulator "HoLLiE", presented at ICRA 2013 in Karlsruhe, has a new website
http://www.fzi.de/en/forschung/projekte/hollie/
A main feature of HoLLiE is the actuated body that can bend far enough to allow the robot to grasp stuff from the floor.
(Thanks to Andreas Hermann - FZI)

Robotiq 2-finger gripper is now available for Baxter

http://blog.robotiq.com/bid/70500/Robotiq-2-Finger-Adaptive-Gripper-Now-Packaged-for-Baxter-Research

The APAS family by BOSCH: The Automatic Production Assistants of the APAS family demonstrate already today which technologies the future Industry 4.0 could use. In intelligent and net-worked factories – the so-called smart factories – people, machines and products will communicate and cooperate in a much more intensive and closer way.

http://bosch-apas.com/en/apas/home_2/bosch_apas.html

The European Workshop on Deformable Object Manipulation took place on March 20th at INNOROBO in Lyon, France. Proceedings can be consulted online at:

http://ewdom.irccyn.ec-nantes.fr/

AUTOMATICA 2014, the 6th International Trade Fair for Automation and Mechatronics, will be held in München, Germany in June 3-6.

http://automatica-munich.com/en/Home

EuRoC, European Robotics Challenges, has currently four distinct calls, each one addressing a different target group:

Call for Challengers (Deadline: 2014-06-30)

Call for End Users (Deadline: 2014-11-15)

Call for Technology Developers (Deadline: 2014-11-15)

Call for System Integrators (Deadline: 2014-11-15)

Info day: May 5th, 2014, in Stuttgart, Germany.

http://www.euroc-project.eu/index.php?id=293

(Thanks to Niels Jepsen - Innocentive)