

Jingyi Xu

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RESEARCH INTERESTS	Grasping and manipulation of deformable objects <ul style="list-style-type: none">Contact modeling, grasping posture estimation, grasp stability assessment, grasp adaptation 3D perception, tactile-based object recognition
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EDUCATION	Technical University of Munich (TUM) Ph.D. Candidate, Chair of Media Technology Expected Oct. 2019 Advisor: Prof. Dr.-Ing. Eckehard Steinbach Research Focus: Grasping and manipulation of deformable objects Master of Science (M.Sc.) with High Distinction, TUM Jul. 2014 Electrical and Computer Engineering GPA: 1.2 (on a scale from 1 to 5, with 1 being the highest score) Bachelor of Science (B.Sc.), TUM Aug. 2012 Electrical and Computer Engineering
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RESEARCH EXPERIENCE	Technical University of Munich (TUM) Ph.D. Candidate Nov. 2014 - present Advisor: Prof. Dr.-Ing. Eckehard Steinbach. Current research focuses on modeling the 6D limit surface of a curved contact area due to soft fingers. The limit surface is then used as a foundation of a new grasp quality metric, which is suitable for manipulating both rigid and deformable objects. The metric will be further combined with learning-based approaches to manipulate a larger variety of objects. Master Thesis Oct. 2013 - Jul. 2014 Topic: "Order Reduction of Pseudo-Boolean Functions for QPBO" Advisors: Dipl.-Ing. Roderick de Nijs and Univ. Prof. Dr.-Ing. Martin Buss. Algorithm development for order reduction and optimization of higher-order pseudo-boolean functions. Applied for image segmentation and image de-noising. Graduate Research Assistant Oct. 2012 - Apr. 2013 Supervisor: Dipl.-Ing. Roderick de Nijs. Algorithm development and implementation for semantic segmentation based on randomized decision forests and bag-of-words. RoboHockey Tournament Oct. 2012 - Jan. 2013 Supervisors: Dipl.-Ing. Tim Habigt and Dipl.-Ing. Julian Habigt. Robot Hockey Tournament with the Pioneer 3-AT mobile platforms. LIDAR based localization (ICP), object position estimation, color detection. Attack and defense strategy design, PID controller, obstacle avoidance. 3D Data Analysis and Visualization for Robotics Oct. 2012 - Jan. 2013 Supervisor: Prof. Dr. Gordon Cheng. Statistical analysis: PCA, ICA, LDA. 3D pose estimation and registration. Isolation of 3D objects. RoboSoccer Tournament Apr. 2012 - Sep. 2012 Supervisor: Dipl.-Ing. Martin Schäfer. Multi-robot soccer tournament with the Pololu 3Pi robots. PID controller, defense strategy design. Bachelor Thesis Sep. 2011 - Dec. 2011 Topic: "An adaptive higher-order sliding mode controller for a cart-pendulum system." Advisor: Dr.-Ing. Marion Leibold. Development of the super-twisting algorithm to reduce high-frequency oscillation for a cart-pendulum system.
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PUBLICATIONS	<p>[1] J. Xu, A. Bhardwaj, G. Sun, T. Aykut, N. Alt, M. Karimi, E. Steinbach. "Learning-Based Modular Task-Oriented Grasp Stability Assessment." <i>IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)</i>, 2018 (accepted).</p> <p>[2] T. Aykut, C. Burgmair, M. Karimi, J. Xu, E. Steinbach. "Delay Compensation for Actuated Stereoscopic 360 Degree Telepresence Systems with Probabilistic Head Motion Prediction." <i>IEEE Winter Conference on Applications of Computer Vision (WACV)</i>, 2018.</p> <p>[3] T. Aykut, C. Zou, J. Xu, D. Van Opdenbosch, E. Steinbach. "A Delay Compensation Approach for Pan-Tilt-Unit-based Stereoscopic 360° Telepresence Systems Using Head Motion Prediction." <i>IEEE International Conference on Robotics and Automation (ICRA)</i>, 2018.</p> <p>[4] J. Xu, N. Alt, Z. Zhang, E. Steinbach. "Grasping posture estimation for a two-finger parallel gripper with soft material jaws using a curved contact area friction model." <i>IEEE International Conference on Robotics and Automation (ICRA)</i>, 2017.</p> <p>[5] N. Alt, J. Xu, E. Steinbach. "A dataset of thin-walled deformable objects for manipulation planning." <i>Int. Workshop on Grasping and Manipulation Datasets, in conjunction with IEEE International Conference on Robotics and Automation (ICRA)</i>, 2016.</p> <p>[6] N. Alt, J. Xu, E. Steinbach. "Grasp planning for thin-walled deformable objects." <i>Int. Workshop on Robotic Hands, Grasping, and Manipulation, in conjunction with IEEE International Conference on Robotics and Automation (ICRA)</i>, 2015.</p>
SCHOLARSHIPS	<p>The Deutschlandstipendium, TUM Oct. 2013 - Sep. 2014 Scholarship for talented and outstanding students. Supported by the MAN Truck and Bus AG.</p>
CAMPUS TALKS	<p>Technical University of Munich (TUM) ICS Research Seminar, Institute for Cognitive Systems Apr. 2017 Invited by Prof. Dr. Gordon Cheng. Topic: "Grasping posture estimation for a parallel soft gripper using a curved contact area friction model."</p> <p>Doctoral Seminar, Chair of Media Technology Jul. 2017 Invited by Prof. Dr.-Ing. Eckehard Steinbach. Topic: "Grasping and manipulation of deformable objects."</p>
LEADERSHIP, MENTORING AND TEACHING	<p>Technical University of Munich (TUM) Computational Haptics Laboratory (C++) Apr. 2015 - present Supervision of weekly programming tasks and term team projects.</p> <p>Lab Course Android Programming Oct. 2015 - present Programming lectures for Java and Android. Supervision of term projects for App development.</p> <p>RoboSoccer Tournament Apr. 2012 - Sep. 2012 Team leader. 2nd Prize of the RoboSoccer Tournament 2012.</p> <p>Supervision of student projects Jan. 2015 - present Theses supervision of 6 undergraduate and graduate students. Topics include simulation, recognition and grasp synthesis of deformable objects, improvement of tactile sensors.</p>
OTHER QUALIFICATIONS AND INTERESTS	<p>Programming: C/C++, Python, Java, Matlab, ROS, Mathematica, OpenCV, PCL, QT, Android Software: Linux, Visual Studio, LaTeX, Git, SVN, Vim, MS Office Languages: Native Chinese, fluent written and spoken English and German. Interests: Robotics, piano, books and hiking.</p>