

PERSONAL INFORMATION

Can Erdogan



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Date of birth 22 Jun 1989 | Nationality Turkish

WORK EXPERIENCE

1 Jul 2016–Present

Postdoctoral Research Assistant

Robotics and Biology Laboratory, Technical University of Berlin, Berlin (Germany)

- Funded project: Soft Manipulation (SoMa), European Union's Horizon 2020 Research and Innovation Programme Grant
- Manipulation planning with underactuated soft hands
- Analysis of human grasping strategies and deployment to robots
- System development for industrial fruit picking scenarios

EDUCATION AND TRAINING

15 Aug 2011–15 May 2016

Ph.D. in Robotics

Georgia Institute of Technology, Atlanta (United States)

- **Thesis title:** Planning in Constraint Space for Multi-body Manipulation Tasks
- **Research advisors:** Henrik Christensen, Frank Dellaert, Mike Stilman
- Manipulation planning with humanoid robots
- Leading hardware and software development on humanoid robot Golem Krang
- Computer vision: planar segmentation of RGBD data with Markov Chain Monte Carlo sampling methods

15 Aug 2007–15 May 2011

Bachelors in Computer Science, minor in Robotics

Carnegie Mellon University, Pittsburgh (United States)

- **GPA:** CS: 3.48, robotics: 4.0
- **Specialization:** Multi-robot motion planning and learning (RoboCup SSL 2010-11)
- **Research advisor:**

PERSONAL SKILLS

Mother tongue(s) Turkish

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
French	A2	A2	A2	A2	A2
DELF A2					
German	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Organisational / managerial skills

- I lead a collaboration effort between undergraduate, masters and Ph.D. students in TUB to develop compliant grasping algorithm.
- I lead the study of human grasping project for the SoMa consortium across three groups in TUB, UNIPI and DLR institutions.
- I helped the organizing committee of the International Conference on Humanoids Robotics 2013 in reviewing papers, executing robot demos, and assisting with the conference program.
- I served twice as a teaching assistant for a course on robot planning by Prof. Mike Stilman.

Job-related skills

- **Software:**
 - Simulators: Gazebo, SOFA, DART, Box2D
 - Machine learning: Tensorflow, Scikit-learn
 - Languages: C++, Matlab and Python.
- **Hardware:**
 - CAD development with Solidworks
 - Manufacturing: 3D printing, water jet cutter, etc.
- **Robotic platforms:**
 - Barrett WAM manipulator: naturally backdrivable robot for compliant grasping and manipulation
 - Golem Krang: a Segway-like balancing humanoid robot with two 7-dof Schunk manipulators at 1.9m (6'2") height and 140kg (300lbs) weight
 - Hubo 2 Plus: humanoid robot designed by KAIST
 - Turtlebot/iRobot Create: 3D reconstruction and multi-robot control research
 - Nao: humanoid robot developed by Aldebaran Robotics - undergraduate locomotion research
 - CMDragons: RoboCup small sized league, undergraduate multi-robot learning research

ADDITIONAL INFORMATION

Journals

- C. Erdogan, S. Puhlmann, F. Heinemann, M. Maertens, O. Brock. Exploiting contact with environment enables versatile and robust grasping. PLOS One: Psychology. (in preparation)
- C. Erdogan and M. Stilman. Autonomous Design of Functional Structures. Advanced Robotics: Special Issue on Humanoid Robotics, 2015.

Book chapter

- C. Erdogan and M. Stilman. Autonomous Realization of Simple Machines. Experimental Robotics, 471-486Springer International Publishing2016.

Conferences

- C. Erdogan and O. Brock. Contact Space Decomposition for Robust Motion under Uncertainty. International Conference on Intelligent Robots and Systems (IROS), 2018 (submitted).
- C. Erdogan, A. Schröder, O. Brock. Coordination of Intrinsic and Extrinsic Degrees of Freedom in Soft Robotic Grasping. International Conference on Robotics and Automation (ICRA), 2018.
- A. Huaman, B. Milville, M.A. Gutierrez, C. Erdogan, M. Stilman, H. Christensen, H. Ben Amor. Exploiting Symmetries and Extrusions for Grasping Household Objects. International Conference on Robotics and Automation (ICRA), 2015.
- M. Stilman, C. Erdogan, S. Reynolds-Haertle, M. Zafar, P. Hou and G. Tracy. Robots Using Environment Objects as Tools: The 'MacGyver' Paradigm for Mobile Manipulation. International Conference on Robotics and Automation (ICRA), 2014.
- C. Erdogan and M. Stilman. Incorporating Kinodynamic Constraints in Automated Design of Simple Machines. International Conference on Intelligent Robots and Systems (IROS), 2014.

- C. Erdogan and M. Stilman. Ensuring Buildability of Simple Machine Designs with Task-Constrained Motion Planning. Robotics: Science and Systems (RSS) Workshop on Constrained Decision-Making in Robotics, 2014.
- C. Erdogan and M. Stilman. Planning in Constraint Space: Automated Design of Functional Structures. International Conference on Robotics and Automation (ICRA), 2013.
- C. Erdogan, M. Paluri and F. Dellaert. Planar Segmentation of RGBD Images using Fast Linear Fitting and Markov Chain Monte Carlo. Computer and Robot Vision (CRV), 2012.
- C. Erdogan and M. Veloso. Action Selection via Learning Behavior Patterns in Multi-Robot Systems. International Joint Conference on Artificial Intelligence (IJCAI), 2011.

Technical reports

- C. Erdogan, M. Zafar and M. Stilman. Krang Kinematics: A Denavit-Hartenberg Parameterization. Georgia Institute of Technology. GT-GOLEM-2014-001, 2014.
- M. Zafar, C. Erdogan and M. Stilman. Krang: Center of Mass Estimation. Georgia Institute of Technology. GT-GOLEM-2014-002, 2014.
- C. Erdogan, M. Zafar and M. Stilman. Gravity and Drift in Force/Torque Measurements. Georgia Institute of Technology. GT-GOLEM-2014-003, 2014.
- M. Zafar, C. Erdogan and M. Stilman. Towards Stable Balancing. Georgia Institute of Technology. GT-GOLEM-2014-004, 2014.

Publicity and awards

- The Register, "Get a GRIP! Robolution Ain't Happening until Touch is Cracked", 10 March 2017, https://www.theregister.co.uk/2017/03/10/touchy_side_of_robotes/
- IEEE Spectrum article, "'MacGyver' Robots Use Their Environment to Solve Problems", 08 July 2014: <http://tinyurl.com/ieeSpectrumGolemKrang>
- Discovery Channel, Daily Planet segment, 09 Nov 2013, <https://vimeo.com/91846969>
- BBC News, Technology section, "US Navy funds 'MacGyver' robot that can create tools", 10 Oct 2012, <http://www.bbc.com/news/technology-19902954>
- Boeing Blue Skies Research Award, 2011: Carnegie Mellon University, Undergraduate Research Award for "Action Selection via Learning Behavior Patterns in Multi-Robot Systems"