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Worcester, MA-01605, USA

## WORK EXPERIENCE

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- Aug. 2018 – Present *Assistant Professor, Worcester Polytechnic Institute,*  
Robotics Engineering Program and Department of Computer Science  
Worcester, MA, USA.
- Oct. 2014 – June 2018 *Postdoctoral Associate, Yale University*  
Department of Mechanical Engineering and Material Science  
New Haven, CT, USA
- Feb. 2015 – July 2015 *Software Engineer, Delft Robotics*  
Delft, The Netherlands
- Sept. 2008 – Sept. 2009 *Researcher, Sabanci University (SU)*  
Mechatronics Engineering Program  
Istanbul, Turkey
- June 2005 – Aug. 2005 *Intern, FESTO Turkey*  
Istanbul, Turkey

## EDUCATION

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- Dec. 2009 – Jan. 2015 *Ph.D., Biomechanical Engineering, Delft University of Technology*  
Faculty of Mechanical, Maritime and Materials Engineering (3ME)  
Biomechanical Engineering Department  
Delft, The Netherlands  
*Thesis: Active Grasp Synthesis for Grasping Unknown Objects.*  
*Thesis Supervisors: Martijn Wisse, Pieter Jonker*
- Sept. 2006 – June 2008 *M.S. of Mechatronics Engineering, Sabanci University (SU)*  
Faculty of Engineering and Natural Sciences  
Istanbul, Turkey  
*Thesis: Integrated Vision and Force Control Applied to a Robotics Application.*  
*Thesis Supervisor: Kemalettin Erbatur, Mustafa Unel*
- Sept. 2002 – June 2006 *B.S. of Mechatronics Engineering, Sabanci University (SU)*  
Faculty of Engineering and Natural Sciences  
Istanbul, Turkey

## ACADEMIC PUBLICATIONS

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*Underlined authors are Worcester Polytechnic Institute students*

### **Book Chapters:**

M. Rudinac, B. Calli, P. Jonker, "Item Recognition, Learning and Manipulation for a Retail Warehouse Input Station." in "*Automation in warehouse development*", Springer, London, 2011.

### ***International Journal Papers:***

I. Garcia-Camacho, J. Borràs, B. Calli, A. Norton, and G. Alenyà, "Household Cloth Object Set: Fostering Benchmarking in Deformable Object Manipulation", under review in *IEEE Robotics and Automation Letters*, 2022 (accepted).

Y. Sun, J. Falco, M. A. Roa and B. Calli, "Research Challenges and Progress in Robotic Grasping and Manipulation Competitions," in *IEEE Robotics and Automation Letters*, vol. 7, no. 2, pp. 874-881, April 2022.

Z. Liu, W. Liu, Y. Qin, F. Xiang, S. Xin, M.A. Roa, B. Calli, H. Su, Y. Sun, and P. Tan, "OCRTOC: A Cloud-Based Competition and Benchmark for Robotic Grasping and Manipulation", in *IEEE Robotics and Automation Letters*, vol. 7, no. 1, pp. 486-493, Jan. 2022.

B. Calli, A. Dollar, M. A. Roa, S. Srinivasa, and Y. Sun, "Guest Editorial: Introduction to the Special Issue on Benchmarking Protocols for Robotic Manipulation", *IEEE Robotics and Automation Letters*, 6(4), pp.8678-8680, 2021.

S. Natarajan, G. Brown and B. Calli, "Aiding Grasp Synthesis for Novel Objects Using Heuristic-Based and Data-Driven Active Vision Methods", *Frontiers in Robotics and AI*, 8, 2021

A. S. Morgan, K. Hang, W. Bircher, F. Alladkani, A. Gandhi, B. Calli, A. M. Dollar, "Benchmarking Cluttered Robot Pick-and-Place Manipulation with the Box and Blocks Test", *IEEE Robotics and Automation Letters*, 2019.

A. J. Spiers, A. S. Morgan, K. Srinivasan, B. Calli, A. Dollar, "Using a Variable-Friction Robot Hand to Determine Proprioceptive Features for Object Classification during Within-Hand-Manipulation", *IEEE Transactions on Haptics*, 2019.

B. Calli and A. M. Dollar, "Robust Precision Manipulation With Simple Process Models Using Visual Servoing Techniques With Disturbance Rejection," *IEEE Transactions on Automation Science and Engineering*, vol. 16, no. 1, pp. 406-419, 2019.

A. J. Spiers, B. Calli and A. M. Dollar, "Variable-Friction Finger Surfaces to Enable Within-Hand Manipulation via Gripping and Sliding," *IEEE Robotics and Automation Letters*, vol. 3, no. 4, pp. 4116- 4123, 2018.

B. Calli, W. Caarls, M. Wisse, P. Jonker, "Viewpoint Optimization for Aiding Grasp Synthesis Algorithms using Reinforcement Learning," *Advanced Robotics*, vol. 32, no. 20, pp. 1077-1089, 2018.

B. Calli, W. Caarls, M. Wisse and P. P. Jonker, "Active Vision via Extremum Seeking for Robots in Unstructured Environments: Applications in Object Recognition and Manipulation," *IEEE Transactions on Automation Science and Engineering*, vol. 15, no. 4, pp. 1810-1822, 2018.

B. Calli, A. Singh, J. Bruce, N. Rajkumar, A. Walsman, K. Konolige, S. Srinivasa, P. Abbeel, A. M. Dollar, "Yale-CMU-Berkeley Dataset for Robotic Manipulation Research," *International Journal of Robotics Research*, vol. 36, no. 3, pp. 261-268, 2017.

A. Spiers, M. Liarokapis, B. Calli, A. M. Dollar, "Single-Grasp Object Classification and Feature Extraction with Simple Robot Hands and Tactile Sensors," *IEEE Transaction on Haptics*, vol. 9, no. 2, pp. 207-220, 2016.

B. Calli, A. Walsman, A. Singh, S. Srinivasa, P. Abbeel, A. M. Dollar, "Benchmarking in Manipulation Research: Using the Yale-CMU-Berkeley Object and Model Set," *IEEE Robotics and Automation Magazine*, vol. 22, no. 3, pp. 36-52, 2015.

T. Leblebici, B. Calli, M. Unel, A. Sabanovic, S. Bogosyan, M. Gokasan, "Delay Compensation in Bilateral Control Using a Sliding Mode Observer," *Turkish Journal of Electrical Engineering and Computer Sciences*, vol. 19, no. 6, pp. 851-859, 2011.

K. Erbatur, B. Calli, "Fuzzy Boundary Layer Tuning for Sliding Mode Systems as Applied to the Control of a Direct Drive Robot," *Soft Computing - A Fusion of Foundations, Methodologies and Applications*, vol. 13, no. 11, pp. 1099-1111, 2009.

### ***International Conference Papers:***

A. Gandhi, S. Chatterjee, B. Calli, "Skeleton-based Adaptive Visual Servoing for Control of Robotic Manipulators in Configuration Space", submitted to *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2022.

D. Bashkirova, M. Abdelfattah, Z. Zhu, J. Akl, F. Alladkani, P. Hu, V. Ablavsky, B. Calli, S. A. Bargal, and K. Saenko, "ZeroWaste Dataset: Towards Deformable Object Segmentation in Extreme Clutter", accepted to *Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022, arXiv preprint arXiv:2106.02740.

S. Dasari, J. Wang, J. Hong, S. Bahl, Y. Lin, A.S. Wang, A. Thankaraj, K.S. Chahal, B. Calli, S. Gupta, and D. Held, "RB2: Robotic Manipulation Benchmarking with a Twist", In *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS)*, 2021.

F. Alladkani, J. Akl and B. Calli, "ECNNs: Ensemble Learning Methods for Improving Planar Grasp Quality Estimation," *2021 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 4769-4775, 2021

A. Sahin, A. J. Spiers and B. Calli, "Region-Based Planning for 3D Within-Hand-Manipulation via Variable Friction Robot Fingers and Extrinsic Contacts," *2021 IEEE International Conference on Robotics and Automation (ICRA)*, pp. 6549-6555, doi: 10.1109/ICRA48506.2021.9561376, 2021.

J. Akl, F. Alladkani, and B. Calli, "Towards Robotic Metal Scrap Cutting: A Novel Workflow and Pipeline for Cutting Path Generation", *IEEE 17th International Conference on Automation Science and Engineering (CASE)* (pp. 132-137), 2021

G. Narayanan, J. A. Raj, A. Gandhi, A. A. Gupte, A. J. Spiers and B. Calli, "Within-hand Manipulation Planning and Control for Variable Friction Hands", *International Symposium of Experimental Robotics (ISER)*, 2020.

D. Mohtasham, G. Narayanan, B. Calli, A.J. Spiers, "Haptic Object Parameter Extraction during Within-Hand-Manipulation with a Simple Robot Gripper", *Haptics Symposium*, 2020.

A. Morgan, W. Bircher, B. Calli, A. Dollar, "Learning from Transferable Mechanics Models: Generalizable Online Mode Detection in Underactuated Dexterous Manipulation", *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, pp. 5823-5829, 2019.

B. Calli, A. Kimmel, K. Hang, K. Bekris, A. Dollar "Path Planning for Within-Hand Manipulation Over Learned Representations of Safe States", *Proceedings of International Symposium on Experimental Robotics (ISER)*, 2018.

B. Calli, A. Morgen, K. Srinivasan, M. Dollar, "Learning Modes of Within-hand Manipulation," *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, 2018.

B. Calli, A. M. Dollar, "Vision-Based Model Predictive Control for Within-Hand Precision Manipulation with Underactuated Grippers," *Proceedings of IEEE International Conference on Robotics and Automation (ICRA)*, pp. 2839-2845, 2017.

B. Calli, A. M. Dollar, “Vision-based Precision Manipulation with Underactuated Hands: Simple and Effective Solutions for Dexterity,” *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 1012-1018, 2016.

B. Calli, A. Walsman, A. Singh, S. Srinivasa, P. Abbeel, A. M. Dollar, “The YCB Object and Model Set: Towards Common Benchmarks for Manipulation Research,” *Proceedings of IEEE International Conference on Advanced Robotics (ICAR)*, pp. 510-517, 2015.

A. Spiers, M. Liarokapis, B. Calli, A. M. Dollar, “Unplanned, Model-Free, Single Grasp Object Classification with Underactuated Hands and Force Sensors,” *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 5073-5080, 2015.

B. Calli, W. Caarls, Q. Lei, M. Wisse, P. Jonker, “SMAG: Simultaneous Modeling and Grasping,” *Robotics: Science and Systems Conference (RSS), Workshop: Manipulation with Uncertain Models*, 2013.

B. Calli, W. Caarls, P. Jonker, M. Wisse, “Comparison of Extremum Seeking Control Algorithms for Robotic Applications,” *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 3195-3202, 2012.

B. Calli, M. Wisse, P. Jonker, “Grasping of Unknown Objects via Curvature Maximization using Active Vision,” *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 995-1001, September 2011.

A. Y. Yazicioglu, B. Calli, M. Unel, “Image Based Visual Servoing Using Algebraic Curves Applied to Shape Alignment,” *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pp. 5444-5449, 2009.

B. Calli, K. Erbatur, M. Unel, “Visually Aided Force Control with Fuzzy Parameter Tuning,” *IFAC Intelligent Control Systems and Signal Processing*, 2009.

K. Erbatur, B. Calli, “Fuzzy Boundary Layer Tuning as Applied to the Control of a Direct Drive Robot,” *Proceedings of Annual Conference of the IEEE Industrial Electronics Society (IECON)*, 2007.

### ***Refereed Regional Conferences:***

A. Y. Yazicioglu, B. Calli, M. Unel “Cebirsel Eğriler Kullanarak İmge Tabanlı Görsel Geri Beslemeli Denetim,” *Proceedings of Türkiye Otomatik Kontrol Konferansı*, 2009.

B. Calli, T. Leblebici, M. Unel, Asıf Sabanovic, Seta Bogosyan, Metin Gokasan, “İki Yönlü Denetimde İletişim Kanalındaki Gecikmenin Kayan Kipli Gözlemci Kullanarak Telafisi,” *Proceedings of Türkiye Otomatik Kontrol Konferansı*, 2009.

B. Calli, K. Erbatur, M. Unel, “Bulanık Parametre Ayarlamalı Görüntü Destekli Kuvvet Kontrolü,” *Proceedings of Türkiye Otomatik Kontrol Konferansı*, 2008.

K. Erbatur, B. Calli, “Bulanık Mantıklı Sınır Tabakası Kalınlığı Ayarlaması ile Kayan Kipli Robot Kontrolü,” *Proceedings of Türkiye Otomatik Kontrol Konferansı*, 2007.

### **INVITED ARTICLES**

Participated in the report of the workshop “Assured Autonomy: Path Toward Living With Autonomous Systems We Can Trust”, in Computing Community Consortium, 2020.

B. Calli, A. Singh, J. Bruce, A. Walsman, K. Konolige, S. Srinivasa, P. Abbeel, A. M. Dollar, “YCB Benchmarking Project: Object Set, Data Set and Their Applications”, *The Journal of the Society of Instrument and Control Engineers (SICE) of Japan*, 2017.

A. Spiers, M. Liarokapis, B. Calli, A. M. Dollar, “Unplanned, Model-Free, Single Grasp Object Classification with Underactuated Hands and Force Sensors” *The Sixteenth Yale Workshop on Adaptive and Learning Systems*, 2015.

B. Calli, “Vatandaşların Unutturulan Hakkı: Teknoloji (A forgotten right of citizens: Technology)”, *Ayrıntı Dergi, (a Turkish political magazine)*, 2016

## **INVITED TALKS**

- Workshop on Compliant Robot Manipulation: Challenges and New Opportunities, IEEE International Conference on Robotics and Automation (ICRA), Philadelphia, May 2022
- Claflin University, NSF NRT FORW-RD Seminar Talk on Future of Robots in the Workplace – Research & Development Program, online, Oct. 2021
- Mount Holyoke, NSF NRT FORW-RD Seminar Talk on Future of Robots in the Workplace – Research & Development Program, online, Feb. 2021
- Smith College, NSF NRT FORW-RD Seminar Talk on Future of Robots in the Workplace – Research & Development Program, online, Nov. 2020
- Robotic Manipulation of Deformable Objects, Workshop in IEEE International Conference of Intelligent Robots and Systems (IROS), online, 2020
- Advancing the State of Machine Learning for Manufacturing Robotics, Workshop in Robotics: Science and Systems (RSS), online, 2020
- Engineering Seminar Series at Columbia University, NYC, NY, USA, May 2020
- Computer Science Seminar Series at WPI, Boston, MA, USA, Jan. 2020
- Seminar Series at Northeastern University, Boston, MA, USA, Jan. 2020
- Arts & Sciences Week at WPI, MA, USA, Oct. 2019, (<https://www.youtube.com/watch?v=fB4LryLj8eE>)
- UNH Robotics Seminar Series at University of New Hampshire, Manchester, NH, USA, Sept. 2019
- Workshop in Benchmarking Robotics, organized by Facebook, Pittsburgh, PA, USA, Aug. 2019
- Ideaport Webinar Series, Ideaport, Nov. 2018, (<https://www.youtube.com/watch?v=5y1sZUV-364>)
- Mechanical Engineering Department Seminar, at McGill University, Montreal, QC, Canada, April 2018
- Robotics Research Group, at Bosch, Sunnyvale, CA, USA, February 2018
- Department of Mechanical Engineering, at University of Washington, Seattle, WA, USA Feb. 2018
- Robotics Engineering Seminar, at Worcester Polytechnic Institute, Worcester, MA, USA Feb. 2018
- Computer Science Seminar, at University of Minnesota, Minneapolis, MN, USA Feb. 2018
- School of Informatics Seminar, at University of Edinburgh, Edinburgh, U.K., Feb. 2018
- Mechanical Engineering Seminar, at Lehigh University, Bethlehem, PA, USA, Jan. 2018
- Robotics Institute Seminar, at Carnegie Mellon University, Pittsburgh, Pennsylvania, USA Jan. 2018

## **ADMINISTRATION, ORGANIZATION AND EDITORSHIP**

### ***Ongoing***

- Organizing Chair of the IEEE ICRA workshop on Perspectives on Achieving Research Convergence for Robotics-Enabled Future of Work, in collaboration with Taskin Padir, Amy Wrzesniewski, Markus Vincze, Alicia Sasser-Modestino, Aaron Dollar, Emily C. Collins, to be held in Philadelphia on May 2022,
- Organizing committee member of the CORSMAL challenge: Audio-visual object classification for human-robot collaboration at the IEEE International Conference on Acoustics, Speech, and Signal Processing, 2022
- Advisory Board Member, NSF Collaborative Research: Physical Robotic Manipulation Test Facility, Oregon State University (PI: Cindy Grimm) and University of Massachusetts Lowell (PI: Holly Yanco), June 2020 – Now
- Associate Editor, IEEE Robotics and Automation Letters (RA-Letters), 2020-Now (appointment ends in 2022)
- Collaborator on ‘Supporting and Showcasing Public Interest Technology,’ New America Foundation-Public Interest Technology University Network, August 2020 - Now
- Faculty Associate, WPI’s Institute for Science and Technology for Development, September 2020 - Now

- Chair, IEEE Standards Association Study Group on Performance Metrics and Test Methods for Robotic Hands, October 2020 – Now
- Affiliated in National Science Foundation Research Traineeship Program for Future of Robots in the Workplace (NSF NRT FORW-RD), October 2020 - Now
- Founding member, Applied Robot Ethics Lab (AREL), January 2020 – Now
- Guest Editor of Special Issue on Robotic Grasping and Manipulation Challenges and Progress in IEEE Robotics and Automation Letters together with Yu Sun, Joseph Falco, Maximo Roa, Minas Liarokapis, Rong Xiong, Jürgen “Juxi” Leitner, June 2020 – Now
- Co-founder, YCB Benchmarking Project ([www.ycbbenchmarks.org](http://www.ycbbenchmarks.org)), October 2015 - Now

### **Past**

- Supervisor in the Agbogblshie E-Waste Co-design Challenge, Ghana
- Associate Editor, 2022, IEEE International Conference of Robotics and Automation (ICRA), Workshops
- Organizing Committee Member, Workshop on Cloud-Based Competitions and Benchmarks for Robotic Manipulation and Grasping, ICRA 2021
- Associate Editor, 2021, IEEE International Conference on Robotics and Automation (ICRA), Regular papers
- Organizing Committee Member, Workshop on Perception and Modelling for Manipulation of Objects, International Conference on Pattern Recognition (ICPR), 2021
- Associate Editor, 2020 IEEE International Conference of Robotics and Automation (ICRA), Regular papers
- Associate Editor, 2020 IEEE International Conference of Robotics and Automation (ICRA), Workshops
- Organizing Chair, Open Cloud Robot Table Organization Challenge (OCRTOC) in IEEE International Conference on Intelligent Robotics and Systems (IROS) together with Ping Tan, Yu Sun, Hau Su, Ziyuan Liu, Maximo Roa, November 2020
- Organizing Committee Member, Robotics Grasping and Manipulation Competition in IEEE International Conference on Intelligent Robotics and Systems (IROS) together with Yu Sun, Joseph Falco, Maximo Roa, Adam Norton, October 2020
- Associate Editor, 2020 International Conference on Intelligent Robots and Systems (IROS), 2020
- Organizing committee member of Workshop on The Future of Recycling at the Human-Robot Interface, New Haven, CT, USA, February 17<sup>th</sup>-18<sup>th</sup>, 2020
- Associate Editor, Workshops in 2020 IEEE International Conference on Robotics and Automation (ICRA)
- Organizing committee member of Robotic Grasping and Manipulation Competition at IROS 2019 (Macao, China), together with Yu Sun, Joseph Falco, Juxi Leitner, Maximo Roa, Rong Xiong, Yasuyoshi Yokokohji.
- Editor of Special Issue on Benchmarking in Robotic Manipulation in IEEE Robotics and Automation Letters together with Aaron Dollar, Sidd Srinivasa, Maximo Roa, Yu Sun, February 2019 – January 2020.
- “Benchmarks for Robotic Manipulation,” Workshop at 2019 IEEE International Conference On Robotics and Automation (ICRA), Organized by B. Calli, A. Dollar, Y. Sun, M. A. Roa
- “Experimental Robotic Grasping and Manipulation -- Benchmarks, Datasets, and Competitions,” Workshop at 2018 IEEE International Conference On Intelligent Robots and Systems (IROS), Organized by Y. Sun, H. Moon, J. Falco, B. Calli
- Founder, Manipulation and Environmental Robotics Laboratory (MER Lab) at WPI
- Lead Organizer, Workshop on Development of Benchmarking Protocols for Robotic Manipulation, IEEE International Conference On Intelligent Robots and Systems (IROS), together with A. M. Dollar, S. Srinivasa, M. Roa (<http://ycbbenchmarks.org/IROS2017workshop.html>), 2017
- Organizing Committee member, “Benchmarking in Robotics Research: YCB Object and Model Set,” Workshop at IEEE International Conference On Robotics and Automation (ICRA) together with A. M. Dollar, S. Srinivasa, P. Abbeel, (<http://www.ycbbenchmarks.org/>), 2015

### **SPONSORED RESEARCH PROJECTS**

EMR Group – MER Laboratory Collaboration Project through National Science Foundation, Industry-University Cooperative Research Centers (IUCRC), Robots and Sensors for the Human Well-being (ROSE-HUB) - \$49,069 – Between 7/1/21 – 7/1/22

“*Robotic Cutting for Metal Scrap Recycling v2*”

*PI*: Berk Calli (WPI)

EMR Group – MER Laboratory Collaboration Project through National Science Foundation, Industry-University Cooperative Research Centers (IUCRC), Robots and Sensors for the Human Well-being (ROSE-HUB) - \$35,000 – Between 7/1/20 – 7/1/21

*“Robotic Cutting for Metal Scrap Recycling”*

PI: Berk Calli (WPI)

National Science Foundation - \$2,500,000 (\$604,314 to WPI) – Between 9/01/19 – 8/31/23

*“FW-HTF-RL: Collaborative Research: Shared Autonomy for the Dull, Dirty, and Dangerous: Exploring Division of Labor for Humans and Robots to Transform the Recycling Sorting Industry”*

PI: Berk Calli (WPI)

Co-PIs: Jacob Whitehill (Co-PI, WPI), Aaron Dollar (Yale University), Marian Chertow (Yale University), Barbara Reck (Yale University), Brian Scassellati (Yale University) and Amy Wrzesniewski (Yale University), Kate Saenko (Boston University), Vitaly Ablavsky (Boston University)

National Science Foundation - \$317,833 to WPI – Between 8/15/19 – 8/14/22

*“RI: Medium: Collaborative Research: Towards Practical Encoderless Robotics Through Vision-Based Training and Adaptation”*

PI: Greg Hager, (Johns Hopkins University)

Co-PIs: Berk Calli (WPI), Aaron Dollar (Yale University)

## **OTHER AWARDS**

Finalist for Best Manipulation Paper, IEEE International Conference on Robotics and Automation (ICRA), 2019 (A. Morgan, W. Bircher, B. Calli, A. Dollar, *“Learning from Transferable Mechanics Models: Generalizable Online Mode Detection in Underactuated Dexterous Manipulation”*, Proceedings of IEEE International Conference on Robotics and Automation (ICRA), pp. 5823-5829, 2019)

Finalist for Best Manipulation Paper, IEEE International Conference on Robotics and Automation (ICRA), 2018 (B. Calli, A. Morgan, K. Srinivasan, M. Dollar, *“Learning Modes of Within-hand Manipulation.”* Proceedings of IEEE International Conference on Robotics and Automation (ICRA), 2018)

Sabancı University Full Scholarship for M.S. degree education covering all my tuition & living expenses.

Sabancı University Merit Scholarship for B.S. degree education covering 3/4 of my tuition

Letter of appreciation from the university president for my performance in Control System Design course teaching assistantship

Certificate of Sabancı University Dean’s Honor List (for three semesters)

## **PATENTS**

Berk Calli, James Akl, Fadi Alladkani, Roger Morton, 2021, Salvage Metal Cutting Robot, US. # 63/175,166.

## **TEACHING**

- Instructor, RBE 450X: Vision-based Robotic manipulation (Ugrad), Worcester Polytechnic Institute, Rob. Eng. Dept., Fall 2021
- Instructor, RBE 500: Foundations of Robotics (Grad), Worcester Polytechnic Institute, Rob. Eng. Dept., Fall 2021
- Instructor, RBE 500: Foundations of Robotics (Grad), (Async; online) Worcester Polytechnic Institute, Rob. Eng. Dept., Fall 2021
- Instructor, RBE 500: Foundations of Robotics (Sync) (Grad), Worcester Polytechnic Institute, Rob. Eng. Prog., Fall 2020

- Instructor, RBE 500: Foundations of Robotics (Async) (Grad), Worcester Polytechnic Institute, Rob. Eng. Prog., Fall 2020
- Instructor, RBE 595: Special Topics: Robotic Manipulation (Grad), Worcester Polytechnic Institute, Robotics Eng. Dept., Fall 2020
- Instructor, RBE 500: Foundations of Robotics (Grad), Worcester Polytechnic Institute, Robotics Eng. Prog., Fall 2019
- Instructor, RBE 595: Special Topics: Robotic Manipulation (Grad), Worcester Polytechnic Institute, Robotics Eng. Prog., Fall 2019
- Instructor, RBE 500: Foundations of Robotics (Grad), Worcester Polytechnic Institute, Robotics Eng. Prog., Fall 2018
- Instructor, Probabilistic Robotics (Grad), Delft Univ. of Tech., Dept. of Biomechanical Eng., Spring 2013
- Instructor, 3D Robot Vision course (Grad), Delft Univ. of Tech., Dept. of Biomechanical Eng., Fall 2012
- Instructor, 3D Robot Vision course (Grad), Delft Univ. of Tech., Dept. of Biomechanical Eng., Spring 2011
- Instructor, Probabilistic Robotics (Grad), Delft Univ. of Tech., Dept. of Biomechanical Eng., Fall 2010
- Administrator (Grad), Object Oriented Programing Practicum, Delft Univ. of Tech., Dept. of Biomechanical Eng. Spring 2010 – Spring 2014
- Teaching assistant, Motion Control (Undergrad), Sabanci Univ. Mechatronics Program, Spring 2009
- Teaching assistant, Industrial Control (Undergrad), Sabanci Univ. Mechatronics Program, Spring 2008
- Teaching assistant, Control System Design (Undergrad), Sabanci Univ. Mechatronics Program, Fall 2007
- Teaching assistant, Industrial Control (Undergrad), Sabanci Univ. Mechatronics Program, Spring 2007

## **SERVICE BEYOND WPI**

### ***Events***

- MER Lab will be participating in TouchTomorrow 2022, Festival of Science Technology and Robots, Worcester, MA
- MER Lab participated in TouchTomorrow 2021, Festival of Science Technology and Robots, Worcester, MA/Online

### ***External Doctoral Dissertation Committee Member***

- Member of the dissertation committee of Gal Gorjup, The University of Auckland, New Zealand, 2021
- Member of the dissertation committee of Fabrizio Bottarel, Italian Institute of Technology, Genova, Italy, 2021

### ***Related to K-12***

- Judge in Mass Academy STEM Fair, February 2021

### ***Participated Programs***

- Women's Research and Mentorship Program (WRAMP), 2019

### ***Grant Proposal Reviews***

- Proposal Review Panelist, *Engineering Research Initiation (ERI) Program*, National Science Foundation, November 2021
- Proposal Reviewer, Natural Sciences and Engineering Research Council of Canada, December 2020
- Proposal Review Panelist, *Future of Work in Human Technology Frontier Program*, National Science Foundation, April 2020
- Proposal Review Panelist, *Robust Intelligence, Research Initiation Initiative (CRII) Panel*, National Science Foundation, Dec. 2019
- Proposal Review Panelist, *Robust Intelligence Panel*, National Science Foundation, April 2019

### ***Journal Reviews***

- Science Robotics
- International Journal of Robotics Research
- IEEE Robotics and Automation Letters
- Machine Vision and Applications



- Robotics
- Autonomous Robots
- Robotics and Autonomous Systems
- IEEE Transactions on Automation Science and Engineering
- Journal of Mechanisms and Robotics
- Intelligent Service Robotics
- Sensors
- IEEE Robotics & Automation Magazine
- Journal of the Air & Waste Management Association

### ***Conference Reviews***

- IEEE International Conference on Robotics and Automation
- IEEE International Conference on Intelligent Robots and Systems
- IEEE International Conference on Rehabilitation Robotics
- IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics
- International Symposium on Robotics Research
- Robotics: Science and Systems

## **SERVICE TO WPI**

### ***WPI-wide Committees***

- Member of Committee of Academic Policy (CAP), elected for AY2021-2022 and AY 2022-2023
- Robotics Engineering Department Representative, Diversity Allies Forum (Spring 2020 – Spring 2021)
- Judge, WPI's Graduate Research Innovation Exchange (GRIE) (2018 – 2020)
- Member, Working Group on 'Social Impact of COVID-19: Future of Capitalism, Work, and Democracy', 2020 - 2021

### ***Robotics Engineering Department Committees***

- Member, Recruiting Committee (Fall 2021 – Now)
- Member, Diversity Committee (Fall 2020 – Now)
- Member, Graduate Program Committee (Fall 2018 – Spring 2021)
- Member, Colloquium Committee (Fall 2018 – Spring 2020)
- Member, Graduate Curriculum Committee (Fall 2019 – Spring 2020)
- Member, Ad-hoc Symposium Organization Committee (Fall 2019)

### ***Doctoral Dissertation Committee Member***

- Adnan Munawar - An Asynchronous Simulation Framework for Multi-User Interactive Collaboration: Application to Robot-Assisted Surgery, 2020

### ***Master Thesis Committee Member***

- Eduardo Calle Ortiz - Robot-Enhanced ABA Therapy: Exploring Emerging Artificial Intelligence Embedded Systems in Socially Assistive Robots for the Treatment of Autism (Summer 2019)
- Sanket Gujar - Pointwise and Instance Segmentation for 3D Point Cloud (Spring 2019)

## **STUDENT AND RESEARCH STAFF SUPERVISION**

### ***Current PhD Students***

Sreejani Chatterheee, since January 2021  
 Abhinav Gandhi, since Summer 2020  
 Galen Brown, since Fall 2020  
 James Akl, since Aug 2019  
 Fadi Alladkani, since Aug 2019

### ***Current MS Students***

Bharath Kumar Ramesh Babu, directed research supervision, Spring 2022 – Now  
Anujay Sharma, directed research supervision, Spring 2022 – Now  
Abhiroop Ajith, directed research supervision, Spring 2022 – Now  
Krutarth Ambarish, directed research supervision Trivedi, Spring 2022 – Now  
Kunal Gajanan Nandanwar, directed research supervision, Spring 2022 – Now  
Pratyush Kumar Sahoo, directed research supervision, Fall 2021 – Now  
Akshay Laddha, directed research supervision, Fall 2021 – Now

### ***Current Undergraduate Students***

Alysa Moore, directed research supervision, since Fall 2021

### ***Ongoing Undergraduate Capstone/Qualifying Projects***

Metamorphic Manufacturing Robot V2 (capstone project, MQP) (*lead supervisor*), AY 2021-2022

Jonathan R. Landay  
Charles V. Kittler  
Jacob A. Mackenzi  
Sean C. Barry  
Patrick T. Siegler  
Aidan H. Melgar

Robot Escape Room (capstone project, MQP) (*lead supervisor*), AY 2021-2022

Alyssa B. Moore  
Matthew A. Nagy  
Owen Buckingham  
Edward J. Matava

Modular Mobile Base (capstone project, MQP) (*lead supervisor*), AY 2021-2022

Braden W. Foley  
Alexander Corey  
Timothy E. McCarthy  
Kenneth F. Armijo  
Edward J. Jackson

Robotic Waste Sorting V3 (capstone project, MQP) (*lead supervisor*), AY 2021-2022

Kaitlyn O. Fichtner  
Garett K. Ruping  
Nathan M. Bargman  
Mary F. Marquette  
Conrad C. Tulig  
Lauren R. Wach

### ***Completed MS Theses***

Sabhari Natarajan, “Aiding Grasp Synthesis for Novel Objects Using Heuristic-based and Data-driven Active Vision Methods”, Worcester Polytechnic Institute, August 2021

Alp Sahin, “Region-Based Planning for a 3D In-Hand Manipulation Platform Leveraging Variable Friction Fingers and External Surfaces”, Worcester Polytechnic Institute, May 2021

Joshua Amrith Raj, “Autonomous Vision-based Control for Within-hand Manipulation using Variable Friction Fingers”, Worcester Polytechnic Institute, August 2020

***Completed Undergraduate Capstone/Qualifying Projects as Primary Supervisor***

*The Impact of Ethical Considerations In the Context of Pandemics Summer 2020 – Spring 2021:*

Grant, Krystal R.  
Nguyen, Hoang C.

*Robotic Waste Sorting V2 (capsone project, MOP) (lead supervisor), Fall 2020 – Spring 2021:*

[Won Provost's MQP Award Honorable Mention]

Maya A. Sun,  
Isabelle A. Chan  
Nicole Cotto  
Laura E. Bungler

*Ship Recycling Robot (capsone project, MOP) (lead supervisor), Fall 2020 – Spring 2021:*

Noble M. Kalish  
Joshua D. Hoy  
Joseph Cybul  
Isabel Sirgo Morales  
Tyler H. Reiser

*Ethical Discussion of Robotic Advancements (IOP) (lead supervisor), Fall 2020 – Spring 2021:*

David J. Rodriguez  
Brian R. Desousa  
Yaru Gong  
Kaitlyn O. Fichtner

*Mouth-Operated Assistive Device for People with Disabilities (capsone project, MOP) (co-supervisor), Fall 2020 - Spring 2021:*

Grace M. Antedomenico  
Hunter J. Lutte  
Benjamin J. Marshall  
Philip Phan  
Rosana A. Pochat Garcia  
Sami Saif

*Flexible Robotic Origami Gripper(capsone project, MOP) (co-supervisor), Fall 2020 – Spring 2021:*

Maria D. Medina Martinez

*Metamorphic Manufacturing (capsone project, MOP) (co-supervisor), Fall 2020 - Spring 2021:*

Ryan N. Beaver  
Ethan Campbell  
Nathan J. Gere,  
Antoinette G. Mavrotheris  
Arnold W. Muralt

*Engineering Solutions for Ghana E-Waste Problems (co-supervisor), Fall 2020:*

Adrianna Z. Staszewska  
Emily L. Sansoucy  
Seamus S. Flanagan  
Sawyer J. Fenlon

*Robotic Waste Sorting Project (capstone project, MOP) (lead supervisor) Fall 2019 – Spring 2020:*

Arianna Kan  
Kyle Heavey  
Mikayla Fischler

Reusable Cup Machine Project (capsone project, MOP) (co-supervisor) Fall 2019 – Spring 2020:

Jehu De la Rosa  
Gregory Kashmanian  
Nick Kratovil  
Molly O'Connor  
Owen Smith

Urgency Ethics in Robotics (IQP) (co-supervisor), Summer 2020

Razan Andigani

**Past MS Students**

Chintan Desai, directed research supervision, Summer 2021 – Fall 2021  
Sushmitha Beled, directed research supervision, Summer 2021 – Fall 2021  
Sayan Das, directed research supervision, Fall 2021  
Krishna S. Madhurkar, directed research supervision, Spring 2021  
Rishabh A. Chadha, directed research supervision, Spring 2021  
Sabhari Natarajan, MS thesis advisor, Fall 2020 – Summer 2021  
Alp Sahin, MS thesis advisor, since Spring 2020 – Spring 2021  
Abhishek Jain, directed research supervision, since Fall 2020 – Spring 2021  
Craig Miller, directed research supervision, Since Fall 2020 – Spring 2021  
Vignesh Kannan Ganesa Subramaniyan, directed research supervision, Fall 2020 – Spring 2021  
Adhitya Athyr Ganesh, individual research supervision, Fall 2019 – Spring 2021  
Soumya S. Balijepally, directed research supervision, Fall 2020  
Paurvi Dixit, directed research supervision, Fall 2020  
Joshua Amrith Raj, MS thesis advisor, Fall 2018 – Summer 2020  
Akshata S. Pore, directed research supervision, Spring 2020 – Summer 2020  
Chinmay Burgul, directed research supervision, Fall 2019 – Summer 2020  
Ajay Balasubramanian, directed research supervision, Spring 2020 – Summer 2020  
Ajay Tulsyan, directed research supervision, Spring 2020  
Gokul Narayanan, practicum supervision, Spring 2020  
Vamshi Krishna Uppunthala, directed research supervision, Fall 2019 – Spring 2020  
Abhinav Gandhi, directed research supervision, Spring 2019 - Spring 2020  
Snehal Dikhale, directed research supervision, Fall 2019 – Spring 2020  
Lakshay Gopalka, directed research supervision, Spring 2020  
Gokul Narayanan, directed research supervision, Spring 2019 - Fall 2019  
Yash Sandeep Shukla, directed research supervision, Spring 2019 - Fall 2019  
Qinlun Luan, individual research supervision, Fall 2019  
Aditya Gupte, directed research supervision, Spring 2019  
Mihir Deshingkar, directed research supervision, Spring 2019  
Nicholas Smith, directed research supervision, Fall 2018-Spring 2019  
Prakash Baskaran, directed research supervision, Spring 2019

**Past Undergraduate Students (excluding the IQP and MQP Capstone students above)**

Manjusha Chava, individual research supervision, Fall 2019  
Khadijah Ibrahim, Women's Research and Mentorship Program (WRAMP), Fall 2019

**Past High School Interns Supervised**

Ansh Motiani, Internship, Spring 2021 – Summer 2021  
Adi Gupta, Internship, Spring 2021 – Summer 2021  
Ivy McDorman, Women's Research and Mentorship Program (WRAMP), Fall 2019

Gianna Rouse, Women's Research and Mentorship Program (WRAMP), Fall 2019

***Past Middle School Interns Supervised***

Mihir Gannavarapu, E-Waste Recycling Survey, Summer 2020

**PROFESSIONAL SOCIETIES**

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- Member, IEEE, (2015 – Now)
- Member, IEEE Robotics and Automation Society (2017 – Now)

**SELECTED PRESS AND MEDIA COVERAGE**

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“Worcester Polytechnic Institute Researcher Leads \$2.5 Million Study to Develop New Robotics for Recycling Centers”, WPI News, Nov. 2019

“WPI scientist looking for robotic efficiencies in recycling”, Telegram, Nov. 2019

“Researchers to Develop Robotics for Recycling Centers”, Waste 360, Nov. 2019

“Worcester Polytechnic Institute Researcher Leads \$2.5 Million Study to Develop New Robotics for Recycling Centers”, Robotics Tomorrow, Nov. 2019

“Yale’s Robot Hand Copies How Your Fingers Work to Improve Object Manipulation”, IEEE Spectrum, Sept. 2018

“A New Standard in Robotics”, Yale Engineering, 2016