Matt Corsaro

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Education

Brown University — Providence, RI
Ph.D. in Computer Science, GPA: 4.00/4.00 Advisors: George Konidaris and Stefanie Tellex — 2017–Present

Northeastern University — Boston, MA
M.S. in Computer Science, GPA: 3.96/4.00, Advisor: Robert Platt — 2015–2017

Rensselaer Polytechnic Institute — Troy, NY
B.S. in Electrical Engineering, GPA: 3.98/4.00 — 2012–2015

Publications

[1] **M. Corsaro**, S. Tellex, and G. D. Konidaris, "Learning task-oriented grasps from limited labeled data", in *Under Review at the 6th Conference on Robot Learning*, Jun. 2022.

[2] **M. Corsaro**, S. Tellex, and G. D. Konidaris, "Learning to detect multi-modal grasps for dexterous grasping in dense clutter", in *Proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems*, Sep. 2021.

[3] T. Nguyen, N. Gopalan, R. Patel, **M. Corsaro**, E. Pavlick, and S. Tellex, "Affordance-based robot object retrieval", *Autonomous Robots*, Aug. 2021.

[4] B. Tang, **M. Corsaro**, G. D. Konidaris, S. Nikolaidis, and S. Tellex, "Learning Collaborative Pushing and Grasping Policies in Dense Clutter", in *Proceedings of the 2021 International Conference on Robotics and Automation*, May 2021.

[5] T. Nguyen, N. Gopalan, R. Patel, **M. Corsaro**, E. Pavlick, and S. Tellex, "Robot Object Retrieval with Contextual Natural Language Queries", in *Robotics: Science and Systems XVI*, Jul. 2020.

Research Experience

Brown University — Providence, RI
Research Assistant @ George Konidaris's Intelligent Robot Lab — 2017–Present

- Grasp Detection for Intelligent Manipulation
- Ongoing dissertation research on robot grasping and abstraction for intelligent manipulation.
- Completed course projects involving *Action-Conditional Video Prediction using Deep Networks in Atari Games* and integrating deep learning into *Skill Discovery in Continuous Reinforcement Learning Domains using Skill Chaining*.

Northeastern University — Boston, MA
Research Assistant @ Robert Platt's The Helping Hands Lab — 2015–2017

- Grasp Pose Detection in Dense Clutter with a UR5
- Ported the system described in *High Precision Grasp Pose Detection in Dense Clutter* to a UR5 robot and helped to improve the grasp success rate in preparation for *Grasp Pose Detection in Point Clouds*.

Harvard University — Cambridge, MA
Summer Research Intern @ Robert Howe's Harvard Biorobotics Lab — Summer 2014

- Grasp Point Recognition from Geometric Cues
- Integrated a computer vision algorithm to detect and execute grasps with a real robot.

Work Experience

Mitsubishi Electric Research Laboratories Cambridge, MA
Robot Research Science Intern Summer 2021

- Completed independent research project on robotic manipulation that may be included as part of upcoming publication.

Locus Robotics Wilmington, MA
Robot Software Engineering Intern Summer 2017

- Depth Estimation from 2D Images
- Computer vision project to extract point clouds from monocular camera feed on mobile robot.

Locus Robotics Wilmington, MA
Robot Software Engineering Intern Summer 2016

- 3D Vision for Mobile Robots
- Integrated 3D depth sensor with mobile robot platform, improved 3D data processing pipeline.

Vecna Technologies Cambridge, MA
Robot Software Engineering Intern Summer 2015

- Navigation for Mobile Robots
- Worked on mobile robot navigation stack to execute predictable motion paths.

The Boeing Company Troy, NY
Rensselaer Multidisciplinary Capstone Design Project Spring 2015

- Robot Arms for Airplane Assembly
- Led multidisciplinary group of students in designing and simulating robotic arms for automated airplane wing maintenance and assembly.
- Held weekly conference calls with Boeing engineer, presented results to group of Boeing employees.

Awards

- Coline M. Makepeace Fellowship 2021–2022
- Andries van Dam Graduate Fellowship 2017–2018
- RPI Wynatt James William Prize 2015
- Boeing Scholarship 2015
- RPI Medal 2012

Teaching

- **Grad Teaching Assistant** at Brown University Spring 2018
  Topics in Collaborative Robotics (CSCI 2951K)
- **Teaching Assistant** at Northeastern University Spring 2017
  Foundations of Artificial Intelligence (CS 5100)
- **Head Teaching Assistant** at Northeastern University Fall 2016
  Foundations of Artificial Intelligence (CS 5100)

Academic Service

- Journal Reviewing:
  - IEEE Robotics and Automation Letters 2021, 2022
- Conference Reviewing:
  - IEEE International Conference on Robotics and Automation 2021, 2022
  - IEEE/RSJ International Conference on Intelligent Robots and Systems 2022

Mentorship

- Bingjie Tang, Brown University, M.S. 2020 2018–2020
  Now Ph.D. Student at University of Southern California
  Project: Learning Combined Planar Pushing and 6 DoF Grasping Policies
- Anthony Cruz, Brown University, Sc.B. 2018 2017–2018
  Now Software Engineer at Google
- Four high school students from the MET High School 2018–2019
  Mentored four students through Brown's CSCI 1951R: *Intro to Robotics* curriculum.

Skills

- **Programming:** C++, Python
- **Deep Learning:** TensorFlow
- **Robot Software:** ROS, PCL
- **Simulation:** Drake, MuJoCo
- **Some additional experience with:** PyTorch, PyBullet, MATLAB

Outreach & Service

- Outreach Coordinator for the Intelligent Robot Lab and Humans to Robots Lab 2018–Present
  Schedule lab tours and presentations for elementary, middle, and high school student groups, scout groups, visiting university officials, professional groups, alumni, and staff. Traveled to local schools and the Rhode Island Robot Block Party to teach the community about robotics.
- Application Feedback Program for Underrepresented Applicants 2020
  Assisted three PhD applicants from underrepresented groups by reviewing their résumés, statements of purpose, and other documents, providing advice, and helping them navigate the PhD application process.
- Brown University Graduate Student Council 2018–2019
  One of the computer science department's representatives to the grad student council.
- Brown CS Department Info Khan 2021–Present
  Responsible for maintaining the graduate student web structure and assisting students in establishing their web presence.

Selected Coursework

Brown University
CSCI 2470 Deep Learning
CSCI 2951X Reintegrating AI
CSCI 2951F Learning and Sequential Decision Making

Northeastern University
CS 5335 Robotic Science and Systems
CS 6140 Machine Learning
CS 5100 Foundations of Artificial Intelligence
CS 7800 Advanced Algorithms
CS 7600 Intensive Computer Systems
CS 7400 Intensive Principles of Programming Languages

RPI
ESCE 4480 Robotics I
ESCE 4510 Digital Control Systems
CSCI 1200 Data Structures
ECSE 4790 Microprocessor Systems
MATH 4100 Linear Algebra