

Daniel Seita

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Last Updated: October 16, 2021.

Current appointment: Post-Doc, Robotics Institute, Carnegie Mellon University. Advised by David Held.

EDUCATION

University of California, Berkeley. PhD, Computer Science. GPA: 3.90/4.00 **Awarded 2021**
Advised by John Canny and Ken Goldberg.

Williams College. BA, Computer Science and Mathematics (double major), GPA: 3.90/4.00 **Awarded 2014**

RESEARCH INTERESTS

My research lies in robotics, computer vision, and machine learning, with a focus on deformable object manipulation. I am interested in algorithms and representation learning for robust, autonomous robots operating in the unstructured real world.

PUBLICATIONS

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1. Lim*, V., Huang*, H., Chen, Y., Wang, J., Ichnowski, J., **Seita, D.**, Laskey, M. & Goldberg, K. Planar Robot Casting with Real2Sim2Real Self-Supervised Learning. *Under review* (2021).
 2. **Seita, D.**, Gopal, A., Mandi, Z. & Canny, J. DCUR: Data Curriculum for Teaching via Samples with Reinforcement Learning. *arXiv preprint arXiv:2109.07380* (2021).
 3. **Seita, D.**, Kerr, J., Canny, J. & Goldberg, K. Initial Results on Grasping and Lifting Physical Deformable Bags with a Bimanual Robot. *IROS Workshop on Deformable Object Manipulation* (2021).
 4. Hoque*, R., **Seita***, D., Balakrishna, A., Ganapathi, A., Tanwani, A., Jamali, N., Yamane, K., Iba, S. & Goldberg, K. VisuoSpatial Foresight for Physical Sequential Fabric Manipulation. *Autonomous Robots (AURO)* (2021).
 5. Hoque, R., Balakrishna, A., Putterman, C., Luo, M., Brown, D. S., **Seita, D.**, Thananjeyan, B., Novoseller, E. & Goldberg, K. LazyDagger: Reducing Context Switching in Interactive Imitation Learning. *IEEE Conference on Automation Science and Engineering (CASE)* (2021).
 6. **Seita, D.**, Florence, P., Tompson, J., Coumans, E., Sindhvani, V., Goldberg, K. & Zeng, A. Learning to Rearrange Deformable Cables, Fabrics, and Bags with Goal-Conditioned Transporter Networks. *IEEE International Conference on Robotics and Automation (ICRA)* (2021).
 7. Zhang, H., Ichnowski, J., **Seita, D.**, Wang, J., Huang, H. & Goldberg, K. Robots of the Lost Arc: Self-Supervised Learning to Dynamically Manipulate Fixed-Endpoint Cables. *IEEE International Conference on Robotics and Automation (ICRA)* (2021).
 8. Ganapathi, A., Sundaresan, P., Thananjeyan, B., Balakrishna, A., **Seita, D.**, Grannen, J., Hwang, M., Hoque, R., Gonzalez, J., Jamali, N., Yamane, K., Iba, S. & Goldberg, K. Learning Dense Visual Correspondences in Simulation to Smooth and Fold Real Fabrics. *IEEE International Conference on Robotics and Automation (ICRA)* (2021).
 9. Paradis, S., Hwang, M., Thananjeyan, B., Ichnowski, J., **Seita, D.**, Fer, D., Low, T., Gonzalez, J. E. & Goldberg, K. Intermittent Visual Servoing: Efficiently Learning Policies Robust to Instrument Changes for High-precision Surgical Manipulation. *IEEE International Conference on Robotics and Automation (ICRA)* (2021).
 10. Hwang, M., Ichnowski, J., Thananjeyan, B., **Seita, D.**, Paradis, S., Fer, D., Low, T. & Goldberg, K. Superhuman Surgical Peg Transfer Using Depth-Sensing and Deep Recurrent Neural Networks. *arXiv preprint arXiv:2012.12844* (2020).
 11. **Seita, D.**, Ganapathi, A., Hoque, R., Hwang, M., Cen, E., Tanwani, A. K., Balakrishna, A., Thananjeyan, B., Ichnowski, J., Jamali, N., Yamane, K., Iba, S., Canny, J. & Goldberg, K. Deep Imitation Learning of Sequential Fabric Smoothing From an Algorithmic Supervisor. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (2020).
 12. Hwang, M., Thananjeyan, B., Paradis, S., Seita, D., **Ichnowski, J.**, Fer, D., Low, T. & Goldberg, K. Efficiently Calibrating Cable-Driven Surgical Robots with RGBD Fiducial Sensing and Recurrent Neural Networks. *IEEE Robotics and Automation Letters (RA-L)* (2020).
 13. Hoque*, R., **Seita***, D., Balakrishna, A., Ganapathi, A., Tanwani, A., Jamali, N., Yamane, K., Iba, S. & Goldberg, K. VisuoSpatial Foresight for Multi-Step, Multi-Task Fabric Manipulation. *Robotics: Science and Systems (RSS)* (2020).
 14. Hwang*, M., **Seita***, D., Thananjeyan, B., Ichnowski, J., Paradis, S., Fer, D., Low, T. & Goldberg, K. Applying Depth-Sensing to Automated Surgical Manipulation with a da Vinci Robot. *International Symposium on Medical Robotics (ISMR)* (2020).

15. **Seita, D.**, Tang, C., Rao, R., Chan, D., Zhao, M. & Canny, J. ZPD Teaching Strategies for Deep Reinforcement Learning from Demonstrations. *Deep Reinforcement Learning Workshop, NeurIPS* (2019).
16. **Seita***, D., Jamali*, N., Laskey*, M., Berenstein, R., Tanwani, A. K., Baskaran, P., Iba, S., Canny, J. & Goldberg, K. Deep Transfer Learning of Pick Points on Fabric for Robot Bed-Making. *International Symposium on Robotics Research (ISRR)* (2019).
17. Pan, X., **Seita, D.**, Gao, Y. & Canny, J. Risk Averse Robust Adversarial Reinforcement Learning. *IEEE International Conference on Robotics and Automation (ICRA)* (2019).
18. **Seita, D.**, Krishnan, S., Fox, R., McKinley, S., Canny, J. & Goldberg, K. Fast and Reliable Autonomous Surgical Debridement with Cable-Driven Robots Using a Two-Phase Calibration Procedure. *IEEE International Conference on Robotics and Automation (ICRA)* (2018).
19. **Seita, D.**, Pan, X., Chen, H. & Canny, J. An Efficient Minibatch Acceptance Test for Metropolis-Hastings. *Conference on Uncertainty in Artificial Intelligence (UAI)* (2017).
20. **Seita, D.**, Pokorny, F. T., Mahler, J., Kragic, D., Franklin, M., Canny, J. & Goldberg, K. Large-Scale Supervised Learning of the Grasp Robustness of Surface Patch Pairs. *IEEE International Conference on Simulation, Modeling, and Programming for Autonomous Robots (SIMPAN)* (2016).

WORK EXPERIENCE

Post-Doc **Sept 2021 — Present**
 Carnegie Mellon University Pittsburgh, PA

- Working with Prof. David Held in the Robotics Institute, specializing on algorithms and learning for robot manipulation of deformable objects. Duties also include mentoring students and assisting with grant writing.

Research Intern **May 2020 — Sept 2020**
 Google New York City, NY (Virtual)

- Worked in the Google AI robotics team, hosted by Research Scientist Andy Zeng. My project was on robot manipulation using simulators and machine learning for deformable fabric manipulation.

Research Intern **May 2016 — Aug 2016**
 National Security Agency Laurel, MD

- Worked on a research project to utilize reinforcement learning agents for the problem of computer network defense.

Consultant **May 2015 — Aug 2015**
 Rochester Institute of Technology Rochester, NY (Virtual)

- Worked as a consultant for an REU at RIT which focused on technology accessibility research. Provided feedback on students' research progress and gave advice on graduate school. REU supervisor: Professor Raja Kushalnagar.

TEACHING ASSISTANTSHIPS AND GUEST LECTURES

Fall 2021 Statistical Techniques for Robotics (CS 16-831), gave guest lecture on policy gradients for Prof. David Held
Spring 2019 Designing, Visualizing, and Understanding Deep Neural Networks (CS 182/282A), assistant to Prof. John Canny
Fall 2016 Designing, Visualizing, and Understanding Deep Neural Networks (CS 182/282A), assistant to Prof. John Canny

MENTORING

Status	Name	Affiliation	Years	Next
Undergrad/MS	Ryan Hoque	Berkeley	2018-2020	Berkeley PhD
Undergrad	Aditya Ganapathi	Berkeley	2019-2021	Berkeley MS
Undergrad	Edward Cen	Berkeley	2019	
Undergrad/MS	Samuel Paradis	Berkeley	2019-2021	Google
Undergrad	Jonathan Wang	Berkeley	2020-2021	
Undergrad	Harry Zhang	Berkeley	2020-2021	CMU MS Robotics
Undergrad	Abhinav Gopal	Berkeley	2020-2021	Berkeley MS
Undergrad	Mandi Zhao	Berkeley	2019-2021	Berkeley MS
Undergrad	Vincent Lim	Berkeley	2021	
Undergrad	Edward Li	CMU	2021-	
MS Robotics	Sashank Tirumala	CMU	2021-	
MS MechEng	Sarthak Shetty	CMU	2021-	

INVITED RESEARCH TALKS

Deformable Object Manipulation with Model-Free, Model-Based, and Transporter Network Methods

University of California, Berkeley	April 2021
Carnegie Mellon University	April 2021
Stanford University	April 2021
Williams College	April 2021
University of Toronto	March 2021
Siemens	Feb. 2021

Object- and Action-Centric Learning

NeurIPS 2020 Robot Learning Workshop (invited talk to assist Research Scientist Pete Florence).	Dec. 2020
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OTHER INVITED TALKS

- (02/2021) Invited panelist speaker for a “Society, Robots and Us” conversation, on people with disabilities and robots.
- (02/2021) Invited panelist speaker for Explore Computer Science Research Workshop, hosted by Gallaudet University, providing advice for deaf students.
- (01/2021) Invited panelist speaker for the OurCS@UW+AccessComputing discussion on managing disability access in academia and work.

ACADEMIC SERVICE

- **Conference Paper Reviewer** (with Paper Counts): NeurIPS 2016 (4x), CASE 2018 (1x), CASE 2019 (1x), IROS 2019 (1x), ICRA 2020 (3x), IROS 2020 (3x), CoRL 2020 (4x), ICRA 2021 (3x), IEEE T-RO 2021 (1x), IROS 2021 (3x), CASE 2021 (1x), CoRL 2021 (5x), ICRA 2022 (5x).
- **Workshop Paper Reviewer**: Visual Learning and Reasoning (RSS 2020, 2021), Offline RL (NeurIPS 2020, 2021), Safe and Robust Control (NeurIPS 2021).
- (06/2017 to 08/2021) Primary maintainer for the Berkeley AI Research Blog; responsible for advertising and soliciting posts.
- (12/2019 and 12/2020) Assisted EECS faculty with reviewing PhD applications to Berkeley AI Research.
- (09/2016 to 10/2017) Served as the Computer Science Graduate Student Association Industrial Liaison, raised \$20,000.

AWARDS AND HONORS

2019	Eugene L. Lawler Prize, honoring CS students who have surmounted difficulties (\$2000)
2017	Honorable Mention, Best Student Paper Award at UAI 2017, one of three paper awards given (\$500)
2015–2021	National Physical Science Consortium (NPSC) Fellowship, a 6-year fellowship for research (\$120,000)
2015	Honorable Mention, NSF Graduate Research Fellowship
2014–2016	Berkeley Fellowship, a 2-year fellowship awarded to some incoming UC Berkeley students (\$59,000)
2014	Lucille B. Abt Scholarship, award by the AG Bell Association for the Deaf and Hard of Hearing. (\$7,500)
2014	Phi Beta Kappa, senior inductee, for having a G.P.A. in the top 12.5% of the Williams class of 2014

TECHNICAL SKILLS

Physical Robots	da Vinci Research Kit, Toyota HSR, Fetch, Franka, Sawyer
Libraries	TensorFlow, PyTorch, OpenAI libraries, OpenCV, PyBullet, ROS, Blender, NVIDIA Flex
Programming	Most fluent in Python, with some experience using C++, Java, MATLAB, R, Scala
Other Skills	Google Cloud, docker, Eclipse, git, Jekyll, \LaTeX , Ubuntu, vim

OTHER INFORMATION

- Passed my one hour qualifying oral exam (04/2018), to become officially a “PhD candidate.” Committee members: Ken Goldberg, John Canny, Sergey Levine, and Masayoshi Tomizuka.
- Achieved second highest score of 8.25/10, out of 12 Ph.D. students taking the Berkeley AI preliminary oral exams (08/2015).
- GRE, taken once (03/2013): Quantitative 168/170 (95th perc.), Verbal 164/170 (93rd perc.), and Writing 5.5/6 (98th perc.).
- Have written extensively about AI and ML topics at <https://danieltakeshi.github.io/>, with 200-250 articles on AI, deep learning, reinforcement learning, generative models, robotics, coding practices, and research papers.
- Born deaf, can speak in English or American Sign Language.