Clark TEEPLE

Roboticist with a passion for systems-level design

@ cbteeple@gmail.com ☐ (616) 212-7921 in linkedin.com/in/clarkteeple ⚲ Based in Medford, MA, USA

I am a roboticist with a broad technical background, and experience in both the academic and product development spaces. I thrive in collaborative teams, and I particularly enjoy working on complex problems at the intersection of hardware and software. I am interested in applying my creative engineering mindset to solve impactful, real-world problems in robotics.

🎓 EDUCATION

Nov. 2021	**PhD in Engineering Sciences (Robotics)** – **Harvard University**, Cambridge, MA
	› *Dissertation Title* - Design Principles for Improving Precision and Dexterity of Soft Robotic Hands
	› NSF Graduate Research Fellow
May 2018	**MS in Engineering Sciences (Robotics)** – **Harvard University**, Cambridge, MA
May 2016	**BSE in Mechanical Engineering** – **University of Michigan**, Ann Arbor, MI

☰ SKILLS

Mechanical Design	**SolidWorks**, Fusion 360, OnShape, Eagle CAD (Electronics), DFM/DFA
Software Engineering	**Python** (including SciPy, and Pandas), C++ (embedded), **Linux**
Robotics Frameworks	**Robot Operating System (ROS)**, Physics-Based Simulation (PyBullet)
Leadership	**Technical Team Leadership**, Project Management, Jira

💼 EXPERIENCE

2022-Present

Staff Hardware Engineer, R&D
RIGHTHAND ROBOTICS – Somerville, MA

› Lead the development of a high-performance, industrial-grade 3D camera product as part of the RightPick 4 piece-picking system, and successfully brought it to market. As the Tech Lead for this project, I lead a cross-functional team of subject-matter experts, and coordinated the hardware design and software architecture to ensure seamless integration with the rest of the RightPick 4 system. As an individual contributor, I owned both the hardware design and industrial design of the camera system, and developed several core software features enabling its operation.

› Developed a new robot behavior that quickly detects if the correct number of items are grasped, and brought the feature to production. This behavior leverages realtime sensor data and motion planning to estimate the mass of items as soon as they are grasped, improving the accuracy of RightPick's order fulfilment.

› Made countless smaller contributions to the RightPick codebase, including additional robot behavior improvements and bug fixes.

Team Leadership   Software Engineering   Mechanical Design   Industrial Design   Python

2021–2022
2016–2021

Postdoctoral Fellow
PhD Candidate
HARVARD MICROROBOTICS LAB – Harvard University, Cambridge, MA
Advisor : Prof. Robert Wood

› Led the development of a dexterous soft robotic hand platform capable of in-hand manipulation, and developed relevant performance metrics to quantify in-hand manipulation.

› Investigated factors in the design of soft robotic hands (*friction, compliance, finger arrangement, etc.*) leading to enhanced capabilities in both grasping and in-hand manipulation.

› Improved the precision grasping capabilities of soft grippers by developing finger designs that fully-utilize passive compliance.

› Studied the role of gripper compliance in manipulating fabrics and other thin, flexible objects.

› Developed a modular, high-bandwidth, smooth pressure control system for soft robots. This consists of a custom PCB, firmware, and ROS software package, supporting my own research projects along with those of other lab members.

› Developed calibration protocols for building and controlling physically-accurate soft robots in simulation as part of the development team for the SoMo (Soft Motion) Simulation Framework.

Mechanical Design   Physics-Based Simulation   Embedded Programming   ROS   Python

👶 Mentorship & Teaching

2021-2022	👶	Advisor/Supervisor	Undergraduate Senior Thesis	*Harvard Microrobotics Lab*

> *"Actively-Controlled Finger Arrangement for Soft Robotic Manipulation"*

2020-2021	👶	Advisor/Supervisor	Undergraduate Research Projects	*Harvard Microrobotics Lab*

> *"An Active Palm for Soft Robotic Manipulation"*
> *"Exploring Finger Arrangement for Soft Robotic Manipulation"*

2018-2020	👶	Advisor/Supervisor	Visiting Masters Student Theses	*Harvard Microrobotics Lab*

> *Finger Design Strategies for Dexterous Soft Robotic Manipulation*
> *Manufacturing Methods for Multi-Segment Soft Robotic Fingers*

Fall 2018	✏️	Teaching Fellow	ES51 - Computer Aided Machine Design	*Harvard University*

📄 Selected Publications

C.B. Teeple, J. Werfel, and R.J. Wood, "**Multi-Dimensional Compliance of Soft Grippers Enables Gentle Interaction with Thin, Flexible Objects**", *IEEE International Conference on Robotics and Automation (ICRA)*, **2022**

C.B. Teeple, B. Aktaş, M.C. Yuen, G.R. Kim, R.D. Howe, and R.J. Wood, "**Controlling Palm-Object Interactions via Friction for Enhanced In-Hand Manipulation**", *IEEE Robotics and Automation Letters*, **2022**

M.A. Graule, **C.B. Teeple**, T.P. McCarthy, G.R Kim, R.C. St. Louis, and R.J. Wood, "**SoMo : Fast and Accurate Simulations of Continuum Robots in Complex Environments**", *IEEE International Conference on Intelligent Robots and Systems (IROS)*, **2021**

C.B. Teeple, S. Abondance, and R.J. Wood, "**A Dexterous Soft Robotic Hand for Delicate In-Hand Manipulation**", *IEEE Robotics and Automation Letters*, **2020**

C.B. Teeple, T.N. Koutros, M.A. Graule, and R.J. Wood, "**Multi-Segment Soft Robotic Fingers Enable Robust Precision Grasping**", *International Journal of Robotics Research*, **2020**