

Benjamin Christie

(omitted) | benc00@vt.edu | (omitted), VA (omitted) | Active (omitted)

EDUCATION

M.S. in M.E.: Adaptive Communication Interfaces for Human-Robot Collaboration May 2024 (Anticipated)
Virginia Tech, Blacksburg, VA GPA: 3.78/4.0

B.S. in M.E, Minor in C.S.: Vacuum Compliant 6-DoF Robotic Manipulator May 2022
Specialization: Robotics and Mechatronics GPA: 3.59/4.0
Virginia Tech, Blacksburg, VA

Associate's Degree May 2018
Germanna Community College, Fredericksburg, VA GPA: 4.0/4.0

WORK EXPERIENCE

Graduate Research Assistant August 2022 - Present
Institute: Virginia Tech, Blacksburg, VA
Advisor: Prof. Dylan Losey

- **Thesis:** Developed a novel interface optimization algorithm for task-agnostic settings
- Collaborated on an assortment of HRI-focused projects; see {[Journal](#), [Conference](#)} Papers
- Funded through the DoD SMART Scholarship Program; see [Technical Reports & Presentations](#)

SMART Scholar August 2021 - Present
USACE-ERDC-ITL, Vicksburg, MS
USACE-ERDC-GRL, Alexandria, VA
Supervisors: Amie Burroughs, Vineet Gupta, Dr. Garry Glaspell, & Dr. Anton Netchaev

- **Dambot / REO:** Integrated 9-DoF non-rigid manipulator onto J8 platform for autonomous civil inspections
- **MOWLES:** Developed autonomous navigation and SLAM procedures for low SWaP-C payloads

Mechanical Engineering Intern May 2019 - Jul 2021
USACE-ERDC-GRL, Alexandria, VA
Supervisors: Vineet Gupta & Dr. Garry Glaspell

- **Dambot / MOWLES:** Developed autonomous inspection software with UEE for UGVs and manipulators
- Developed CV framework for object detection, pose prediction, and tracking in low-visibility environments
- Worked part-time during Fall and Spring semesters while completing undergraduate degree

Undergraduate Teacher's Assistant Feb 2019 - Aug 2020
Virginia Tech, Blacksburg, VA
Dr. Jenny Lo: *Introduction to Engineering* & Inst. Sarah Barreto: *Multivariable Calculus*

Undergraduate Mathematics and Writing Tutor Aug 2017 - Aug 2018
Germanna Community College, Fredericksburg, VA
Supervisor: Ann Lyons

TECHNOLOGY SUMMARY

- **Proficient:** Linux, C++, Python, MATLAB, Arduino, ROS, Git, Pytorch, *MoveIt*, Sensor Fusion, HRI
- **Significant Experience:** ROS2, UR5-10, SMAC{C, H}, RL, IRL, NLP, Solidworks

INTERESTS

- Human-Robot communication and collaboration, Machine Learning, UEE and Mapping

JOURNAL PAPERS

1. Benjamin A. Christie, Dylan P. Losey. *LIMIT: Learning Interfaces to Maximize Information Transfer*, arXiv preprint arXiv:2304.08539, 2023. [10.48550/arXiv.2304.08539](https://arxiv.org/abs/2304.08539). Pending at *ACM Transactions on Human-Robot Interaction*.

CONFERENCE PAPERS

3. Joshua Hoegerman, Shahabedin Sagheb, Benjamin A. Christie, and Dylan P. Losey. *Aligning Learning with Communication in Shared Autonomy*, arXiv preprint arXiv:2403.12023, 2024. [10.48550/arxiv.2403.12023](https://arxiv.org/abs/2403.12023). Pending acceptance at *IEEE/RSJ International Conference on Intelligent Robotics and Systems (IROS)*.
2. Benjamin A. Christie, Heramb S. Nemlekar, and Dylan P. Losey. *Accelerating Interface Adaptation with User-Friendly Priors*, arXiv preprint arXiv:2403.07192, 2024. [10.48550/arXiv.2403.07192](https://arxiv.org/abs/2403.07192). Pending acceptance at *IEEE/RSJ International Conference on Intelligent Robotics and Systems (IROS)*.
1. Shahabedin Sagheb, Ye-Ji Mun, Neema Ahmadian, Benjamin A. Christie, Andrea Bajcsy, Katherine Driggs-Campbell, Dylan P. Losey. *Towards Robots that Influence over Long-Term Interaction*, IEEE International Conference on Robotics and Automation (ICRA), 2022. [10.1109/ICRA48891.2023.10160321](https://arxiv.org/abs/2011.1109)

TECHNICAL REPORTS

6. Benjamin A. Christie, Cameron Alred, Michael Paquette, Garry P. Glaspell. *Increasing the degrees of freedom on a robot arm*, ERDC Library, 2023. [10.21079/11681/47846](https://erdc.library.gov.au/record/11681/47846)
5. Benjamin A. Christie, Jordan D. Klein, Anton D. Netchaev, Garry P. Glaspell. *Integrating MOVEit Motion Constraints on a Novel Robotic Manipulator*, ERDC Library, 2023. [10.21079/11681/47845](https://erdc.library.gov.au/record/11681/47845)
4. Bisrat Mekonnen, Benjamin A. Christie, Michael Paquette, Garry P. Glaspell. *3D Mapping and Navigation using MOVEit*, ERDC, 2023. [10.21079/11681/47179](https://erdc.library.gov.au/record/11681/47179)
3. Benjamin A. Christie, Osama Ennasr, Garry P. Glaspell. *Autonomous navigation and mapping in a simulated environment*, ERDC-GRL, 2021. [10.21079/11681/42006](https://erdc.library.gov.au/record/11681/42006)
2. Benjamin A. Christie, Osama Ennasr, Garry P. Glaspell. *ROS integrated object detection for SLAM in unknown, low-visibility environments*, ERDC-GRL, 2021. [10.21079/11681/42385](https://erdc.library.gov.au/record/11681/42385)
1. Garry P. Glaspell, Steven Lessard, Benjamin A. Christie, et. al.. *Optimized Low Size, Weight, Power and Cost (SWaP-C) Payload for Mapping Interiors and Subterranean on an Unmanned Ground Vehicle*, ERDC-GRL, 2020. [10.21079/11681/35878](https://erdc.library.gov.au/record/11681/35878)

PRESENTATIONS

6. *Autonomous Inspection and Exploration with SLAM-Enabled Robotic Manipulators*, ERDC-ITL, 2023
5. *Autonomous Inspection of Civil Structures*, ERDC-{GRL,ITL}, 2022
4. *Vacuum Compliant 6-DoF Robotic Manipulator*, Northrop Grumman & Virginia Tech, 2022
3. *Object Detection and Tracking in Darkness and Fog*, ERDC-GRL, 2021
2. *Bounded UEE with Emergency Fail-safes*, ERDC-GRL, 2020
1. *Unknown Environment Exploration with low SWaP-C UGVs*, ERDC-GRL, 2019

AWARDS

12. DoD SMART Scholarship: USACE-ERDC-{ITL,GRL} & Virginia Tech
11. Alfa Lavel Thermal Inc. Scholarship
10. Benjamin Squire '48 Memorial Scholarship
9. Frederick C. Grant Scholarship
8. Benjamin & Hilda Partlow Scholarship
7. Commonwealth Award Scholarship
6. John M. Scrugg Memorial Scholarship
5. Virginia Tech Award (×3) Scholarships
4. VCCS Award for Excellence in Physics
3. T255 Eagle Scout, SPL, OA
2. ARS Technician
1. {3x3, 4x4, SQ1, Skewb} State Records, Virtual 3x3 World Record