Nathan Thomas White

PhD Candidate
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Research Interests

I am interested in **Human-Robot Interaction**, specifically how we can enable robots to be easier and more intuitive in everyday use. My work seeks to design and develop robot tools and interactions using the input of stakeholders. In my work, I believe in the importance of working with end-users to better understand their preferences and needs, and to ensure the usability and applicability of my work within real-world contexts and usage. Through this collaboration and understanding, in my current work, I am working to develop creative solutions that seek to simplify the usage of collaborative robots (cobots), allow for a more complete realization of their collaborative potential, and better support users in their interactions with cobots.

Education

PhD	University of Wisconsin–Madison, Madison, WI, USA Computer Sciences	2019 - Present
MS	University of Wisconsin–Madison, Madison, WI, USA Computer Sciences	2019 - 2023
BS	University of Minnesota Twin Cities, Minneapolis, MN, USA Computer Sciences	2016 - 2019

Research Experience

Doctoral Research 2019 - Present
University of Wisconsin–Madison, Madison, WI, USA
Computer Sciences
Advisor: Dr. Bilge Mutlu

- In my graduate research, I have worked on designing expressions and interactions for educational robotics projects used for in-home child education. I have also worked on projects for cobot programming and integration, and am further exploring this area for facilitating effective collaborations.

Undergraduate Research Mar 2018 - May 2019
University of Minnesota Twin Cities, Minneapolis, MN, USA
Advisor: Dr. Maria Gini

- During my undergraduate research, I worked with then-graduate student Dr. John Harwell on a simulator for large-scale swarm robotics. I worked on a project facilitating decentralized communication within the swarm.

Publications

Sullivan, D., **White, N.**, Schoen, A., & Mutlu, B. (2023) Making Informed Decisions: Supporting Cobot Integration Considering Business and Worker Preferences. *Under Review*

Sullivan, D., **White, N.**, Hu, Y., Clifton, J., & Mutlu, B. (2023) Robot Primals: Investigating Worldview as a Potential Source for Robot Behavior Design. *Under Review*

Ho, H. R., **White, N. T.**, Hubbard, E. M., & Mutlu, B. (2023, June). Designing Parent-child-robot Interactions to Facilitate In-Home Parental Math Talk with Young Children. In Proceedings of the 22nd Annual ACM Interaction Design and Children Conference (pp. 355-366).

Zhao, F. O., **White, N. T.**, Cagiltay, B., Niedenthal, P., Michaelis, J., & Mutlu, B. (2023). Designing Emotional Expressions for a Reading Companion Robot.

Cagiltay, B., **White, N. T.**, Ibtasar, R., Mutlu, B., & Michaelis, J. (2022, June). Understanding Factors that Shape Childrens Long Term Engagement with an In-Home Learning Companion Robot. In Interaction Design and Children (pp. 362-373).

Schoen, A., **White, N.**, Henrichs, C., Siebert-Evenstone, A., Shaffer, D., & Mutlu, B. (2022, March). CoFrame: A System for Training Novice Cabot Programmers. In 2022 17th ACM/IEEE International Conference on Human-Robot Interaction (HRI) (pp. 185-194). IEEE.

White, N. T., Cagiltay, B., Michaelis, J. E., & Mutlu, B. (2021, June). Designing emotionally expressive social commentary to facilitate child-robot interaction. In Interaction Design and Children (pp. 314-325).

Ho, H. R., Cagiltay, B., **White, N. T.**, Hubbard, E. M., & Mutlu, B. (2021, June). RoboMath: Designing a learning companion robot to support childrens numerical skills. In Interaction Design and Children (pp. 283-293).

White, N., Harwell, J., & Gini, M. (2019). Socially inspired communication in swarm robotics. arXiv preprint arXiv:1906.01108.

Work Experience

Software Development Intern May 2018 - August 2019
IDeaS (Integrated Decisions & Systems)

- Designed and developed a new global user interface for the product.
- Worked to integrate data monitoring and performance metrics into the product.
- Worked in a collaborative, agile environment to develop reliable code and meet product deadlines.

IT Intern September 2014 - August 2017
Fortune Transportation

- Trained employees on how to utilize new technology and procedures.
- Implemented tools for data visualization and analysis.
- Designed, developed, and deployed the company website.

Teaching Experience

Teaching Assistant, University of Wisconsin–Madison Fall 2019
Duties: Led discussions about low-level computer architecture and processes, and created and graded assignments.
CS 354, Machine Organization and Programming

Teaching Assistant, University of Minnesota Twin Cities Spring 2018-Spring 2019
Duties: Led discussions about programming in OCaml, functional programming, recursion, and lazy evaluation. Also, led weekly labs to assist students in hands-on assignments, and graded assignments.
CSCI 2041 Advanced Programming Principles

Skills

Programming
ROS, R, Matlab, Python, C, Rust, Java, React, Javascript, HTML, CSS

Research Methods
Qualitative Analysis, Quantitative Analysis, Interviews, Observations