Matt Whitlock

Cirriculum Vitae

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Research Interests

Augmented Reality (AR) technologies are becoming increasingly ubiquitous in society, and the general excitement toward its potential is growing as the barriers to entry is shrinking. My research interests revolve around how we interact with AR technologies in order to accomplish what is not currently possible with 2D display technologies. I am particularly interested in the use of AR for data visualization, content authoring, and experiential learning and how these technologies can be made more accessible to a wider population.

Education

2016–present **PhD in Computer Science**, *University of Colorado*, Boulder, CO.

2016–2019 **MS in Computer Science**, *University of Colorado*, Boulder, CO.

2011–2016 **BS in Computer Science**, *The University of Alabama*, Tuscaloosa, AL.
Honors College Graduate, Minor in Mathematics
Magna Cum Laude

Professional Experience

Academic Experience

2017– **Research Assistant**, *University of Colorado*, Boulder,CO.
- Study use of Mobile AR for immersive data analysis for field operations
- Evaluate interaction modalities for engagement with AR HMDs
- Build and evaluate efficacy of system to prototype AR applications with a MS HoloLens

2016–2017 **Teaching Assistant**, *University of Colorado*, Boulder,CO.
CSCI 4308: Senior Projects 1 and CSCI 4318: Senior Projects 2.
- Managed 8 software engineering groups in their Senior Capstone projects
- Developed a set of lesson plans to teach core software engineering concepts
- Organized the end of year Computer Science Expo (approximately 500 in attendance)
- Ranked in 89th percentile for overall instructor score within the College of Engineering
  - 88th percentile within Department of Computer Science

2013–2013 **Research Fellow**, *Purdue University*, West Lafayette, IN.
- Part of the University's Research Experience for Undergraduates (REU) program
- Built and evaluated use of a robot as a mobile network access point (AP).

Industry Experience

2019– **Research Intern**, *National Renewable Energy Laboratory (NREL)*, Golden, CO.
- Conducting visualization research to aid practitioners in the lab.

2018–2018 **Research Intern**, *Autodesk Research*, Toronto, ON.
- Formulated research objectives based on existing limitations of prior work found through literature review
- Designed, implemented and evaluated an integrated AR-based system.

2015–2016 **IT Intern**, *The Home Depot*, Atlanta, GA.

- Created a web frontend and backend for a consolidated product lookup application
- Synthesized with frontend developers, UX designers and product owners
- Reverse engineered the user interface of a management console application

2013–2014 **Engineering Co-op**, *ADTRAN Inc*, Huntsville, AL.

- Term 3: Engineered a communication layer for network management
- Term 2: Developed a software submission tool to manage code changes
- Term 1: Developed network maps for monitoring device performance

Publications

Matt Whitlock, Ethan Hanner, Jed Brubaker, Shaun Kane, Danielle Szafir, Interacting with Distant Objects in Augmented Reality, In the *IEEE Virtual Reality (VR)*, 2018.

Phuc Nguyen, Nam Bui, Anh Nguyen, Hoang Truong, Abhijit Suresh, **Matt Whitlock**, Duy Pham, Thang Dinh, Tam Vu, "TYTH-Typing On Your Teeth: Tongue-Teeth Localization for Human-Computer Interface", In the *Proceedings of the ACM International Conference on Mobile Systems, Applications, and Services (Mobisys)*, 2018.

Matt Whitlock , Danielle Szafir, "Situated Prototyping of Data-Driven Applications in Augmented Reality", *ACM Conference on Human Factors in Computing Systems (CHI): Workshop on Interaction Design and Prototyping for Immersive Analytics*.

Annie Kelly , **Matt Whitlock** , Brielle Nickoloff, Angel Lam, Danielle Szafir, Stephen Voida, "Becoming Butterflies: Interactive Embodiment of the Butterfly Lifecycle", In the *ACM International Joint Conference on Pervasive and Ubiquitous Computing (Ubicomp) Poster Proceedings*, 2017.

Esther Rolf, **Matt Whitlock** , Byung-Cheol Min, Eric T Matson, "Enhancing Wi-Fi Signal Strength of a Dynamic Heterogeneous System Using a Mobile Robot Provider", In the *Proceedings of Robot Intelligence Technology and Applications (RITA)*, 2013.

Relevant Skills

Languages — C#, Javascript, Python, Java, Latex.

Frameworks and APIs — Holotoolkit, Aframe (WebVR + WebAR), D3, Optitrack Motive, AngularJS, Jupyter Notebook, WebGL, Kinect 1.8, Node.

Software Tools — Unity, JMP, Tableau.

Hardware — HoloLens, Gear VR, HTC Vive, Arduino, Wii Remote, Kinect.

Service

Referee Service

2018 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI) Poster Proceedings.

2018 ACM/IEEE International Conference on Human-Robot Interaction (HRI) Poster Proceedings.

2018 KSII Transactions on Internet and Information Systems.

Community Outreach

2018 CU Science Ambassador Program: Lead and aid with workshops in line with NSF "Portal to the Public" intiative

2017-2018 CU Senior Project: Manage and mentor a team of Undergraduate Seniors learning software engineering principles

2015 Mentor UPP: Mentoring Undergraduate Freshmen in Engineering

2015 Every Move Counts: Mentoring and teaching chess at Tuscaloosa Elementary and High schools

2014 UA Honors College: Promoting reading and learning skills in Elementary and Middle schools