LEE LISLE

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CAREER SUMMARY

My expertise is in designing, implementing, and evaluating interaction techniques in augmented and virtual reality, with a specialty in sensemaking and cognition research. I am interested in perceptual issues in virtual environments and information access methods in augmented reality. I champion the importance of transdisciplinary work in human-computer interaction, as the future of AR is unrestricted and will be leveraged in disparate and unrelated domains.

EDUCATION

Virginia Tech Blacksburg, Virginia

Ph.D, Computer Science & Applications - GPA: 3.9 *Fall 2022*
Advisor: Dr. Doug A. Bowman
Topic: *Immersive Space to Think: Immersive Analytics for Sensemaking with Multimedia Documents*

M.S., Computer Science & Applications *Spring 2021*

B.S., Computer Engineering *Spring 2015*

RESEARCH POSITIONS

Graduate Research Assistant – Virginia Tech, 3DI Group *Spring 2018 - Present*
Focusing on Sensemaking with Immersive Analytics in augmented and virtual reality
Designed novel 3D input interaction techniques and visualizations in augmented and virtual reality
Designed, Implemented, and Performed Mixed-Method studies to evaluate interaction techniques
Studied cognition and perception in mixed reality and controlling for confounding variables in an evolving technology

Graduate Research Assistant – Virginia Tech, Crowd Intelligence Lab *Spring 2017 - Fall 2017*
Performed full-stack web development for multiple websites with a focus on crowdsourcing & citizen science solutions

SELECTED PROJECTS

Immersive Space to Think *Spring 2019 - Present*
- Implemented an immersive analytics approach for sensemaking of multimedia documents in both AR/VR using Unity, JetBrains Rider, and C# targeting SteamVR, OpenXR, Microsoft HoloLens, and Varjo platforms
- Collaborated with professional historians, intelligence analysts, and other stakeholders to improve design interactions
- Designed and performed mixed-methods exploratory study to identify user behaviors while analyzing and sensemaking with large multimedia datasets. Wrote, published, and orally presented results in [4]
- Collaborated on automatic clustering tools and study design with other Ux Engineers, published results
- Designed and performed mixed-methods study to explore tradeoffs of AR and VR (publication in review)
- Designed and performed mixed-methods study to understand differences in sensemaking process for users when using small and large 2D displays and 3D immersive environments (publication pending)

Input Interaction Portal *Fall 2021 - Present*
- Designed and implemented novel VR technique to show pass-through AR portal for easier control of physical objects and controllers using Varjo and OpenXR platforms
- Designed quantitative evaluation study, collaborated with colleague to perform study, published results in [2]

Glanceable AR *Fall 2017 - Fall 2018*
- Collaborated with a team of Ux engineers to design information access methods in everyday AR contexts
- Proposed and refined dual-task decrement study to evaluate workload of access methods, results published in [6]

Model-Free Point Marking *Fall 2017 - Fall 2018*
- Proposed, designed, and implemented novel AR interaction technique to pinpoint long-range targets (10+ meters) using storyboards, Unity, Visual Studio, and C# targeting a Microsoft HoloLens deployment with iOS companion app
- Designed and performed a 3-way A/B user study to evaluate technique against other solutions using questionnaires and performance data, published results

Interactive Virtual Training System for Elementary Teachers *Fall 2015 - Spring 2017*

- Worked on an interdisciplinary team of educators, designers, and software engineers to storyboard, design, and wireframe an interface for training software for elementary school teachers
- Performed expert heuristic evaluation with a team of 3 Ux engineers to evaluate initial prototypes
- Collaborated with a team of Ux engineers to design and run formative evaluation with stakeholders as participants

SELECTED AWARDS

2022 Pratt Fellowship Scholar *Spring 2022*

Award for high achieving Senior Ph.D Candidates at Virginia Tech

I/ITSEC 2019 RADM Fred Lewis Postgraduate Scholarship *December 2019*

$10,000 Scholarship Award for graduate students in Modeling, Simulation, Training, or Education fields

ICAT SEAD Grant *Fall 2021 - Spring 2022*

E. Gitre, D. Bowman, C. North, P. Newbill, and **L. Lisle.** "Transforming Public Engagement with Underrepresented Stories through Humanities Sources and Immersive Experiences." $23,000.

SELECTED PUBLICATIONS

1. Davidson, K., **Lisle, L.,**, Whitley, K., Bowman, D. A., & North, C. (2022, October). Exploring the Evolution of Sensemaking Strategies in Immersive Space to Think. IEEE Transactions on Visualization and Computer Graphics (01), 1-15.
2. Giovannelli, A., **Lisle, L.**, & Bowman, D. A. (2022, October). Exploring the Impact of Visual Information on Intermittent Typing in Virtual Reality. In 2022 IEEE International Symposium on Mixed and Augmented Reality (ISMAR). IEEE. **(Best Paper Honorable Mention)**
3. **Lisle, L.**, Lu, F., Davari, S., Tahmid, I. A., Giovanelli, A., Ilo, C., ... & Bowman, D. A. (2022, March). Clean the Ocean: An Immersive VR Experience Proposing New Modifications to Go-Go and WiM Techniques. In 2022 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). IEEE. **(Winner, Best Contest Entry)**
4. **Lisle, L.**, Davidson, K., Gitre, E. J. K., North, C. & Bowman, D.A. (2021, March). Sensemaking Strategies with the Immersive Space to Think. In 2021 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). IEEE. DOI: 10.1109/VR50410.2021.00077 **(Nominated for Best Paper)**
5. Zhang, L., Lu, F., Tahmid, I. A., **Lisle, L.**, Davari, S., Gutkowski, N., ... & Bowman, D. A. (2021, March). Fantastic Voyage 2021: Using Interactive VR Storytelling to Explain Targeted COVID-19 Vaccine Delivery to Antigen-Presenting Cells. In 2021 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). IEEE. DOI: 10.1109/VRW52623.2021.00230 **(Winner, Best Contest Entry)**
6. Lu, F., Davari, S., **Lisle, L.**, Li, Y., & Bowman, D. A. (2020, March). Glanceable AR: Evaluating Information Access Methods for Head-Worn Augmented Reality. In 2020 IEEE Conference on Virtual Reality and 3D User Interfaces (VR) (pp. 930-939). IEEE. DOI: 10.1109/VR46266.2020.00113
7. **Lisle, L.**, Merenda, C., Tanous, K., Kim, H., Gabbard, J. L., & Bowman, D. A. (2019). Effects of Volumetric Augmented Reality Displays on Human Depth Judgments: Implications for Heads-Up Displays in Transportation. In International Journal of Mobile Human Computer Interaction (IJMHCI), 11(2), 1- 18.

TECHNICAL SKILLS

Programming Platforms	Proficient in Unity, C/C++, C#, Java, Python, Familiar with Web Development
Mixed Reality Platforms	Proficient in SteamVR, OpenXR, Varjo, familiar with Windows Mixed Reality, ARKit
Ux Practices	Sketching, Storyboarding, Wireframing, Formative and Expert Evaluation

VOLUNTEER WORK

Web Chair ISMAR 2021 *Spring 2021 - Fall 2021*

- Coordinated website design with other chairs, implemented web pages as needed for ISMAR conference

Social Event Coordinator Computer Science Grad Council, Virginia Tech *Fall 2019 - Spring 2021*