Seth Alan **Johnson**

PhD Candidate · Interactive 3D Data Visualization

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Responsibility Analytical Strategic Individualization Developer

Objective

Seth is a Graduate Student working on his Ph.D. in Computer Graphics and Interactive Data Visualization. He is specifically focusing on Virtual Reality applications for facilitating collaboration between artists and data researchers.

Driven to develop techniques for streamlining the development of AR and VR experiences, Seth is pursuing further experience in the development of interactive, high-performance graphics tools. Seth is interested in the development, testing, and optimization of computer graphics applications deployed on state-of-the-art immersive dispalys.

Skills

Software Development	C/C++, C#, UNIX, Unity, OpenGL, GLSL, Python, Git, GitHub, CMake, VR, Magic Leap
Media Production	Adobe After Effects, Adobe Photoshop, Adobe Premiere Pro
Additional tools	Blender, SolidWorks, 3DS Max, 3D Printing, Adobe InDesign

Education

University of Minnesota, College of Science and Engineering — *Minneapolis, MN*

PhD in Computer Science — *Sep. 2014 - Exp. 2020*

- Completed 26 credits of Computer Science and Product Design classes
- Participates in several weekly meetings with research collaborators and colleagues from Medical Device Design and Architecture

University of Minnesota, College of Science and Engineering — *Minneapolis, MN*

Master of Science in Computer Science — *Sep. 2014 - May 2017*

Experience

University of Minnesota — *Minneapolis, MN*

Graduate Student Research Assistant — *Aug. 2014 - PRESENT*

- Research AR/VR rendering and user interface techniques for 3D data visualization
- Develop C++ and Unity software to support interdisciplinary 3D visualization research tasks
- Produce and direct videos demonstrating lab projects
- Host regular Virtual Reality lab demos and tours for visiting faculty and school groups

Samsung Research USA — *San Jose, CA*

Software Research Intern — *May 2017 - August 2017*

- Research advanced GPU profiling techniques for mobile graphics applications

Amazon — *Seattle, WA*

Software Engineering Intern — *May 2014 - August 2014*

- Researched new, high-performance loading algorithms for digital content
- Gained experience using industry-level version control and testing for graphical iOS end-user software

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AppFirst, Inc *Bloomington, MN*

Software Engineering Intern *Mar. 2012 - Nov. 2012*

- Created and maintained automated testing infrastructure for cross-platform product
- Configured Windows Server, Linux, and Macintosh virtual machines
- Tested and debugged product written in C
- Developed product API packages in a Git-based team environment using Python and C#

Research

Collaboration

MinnLab *Minneapolis, MN*

Visualization Design and Software Development *Jan. 2016 - PRESENT*

- Collaborated with a team of architects to develop interactive sculpture art
- Crafted a novel approach to visualizing several decades of climate data

Presentations

2016 **Immersive Analytics**, Workshop talk at Interactive Surfaces and Spaces conference *Niagara Falls, ON*

2015 **IEEE VR Doctoral Consortium**, Research Presentation *Arles, France*

Publications

Johnson, Seth, et al. "Artifact-Based Rendering: Harnessing Natural and Traditional Visual Media for More Expressive and Engaging 3D Visualizations." *IEEE VIS* 2019.

Johnson, Seth, et al. "Bento Box: An Interactive and Zoomable Small Multiples Technique for Visualizing 4D Simulation Ensembles in Virtual Reality." *Frontiers in Robotics and AI* 2019.

Johnson, Seth, et al. "Immersive Analytics for Medicine: Hybrid 2D/3D Sketch-Based Interfaces for Annotating Medical Data and Designing Medical Devices." *Proceedings of the 2016 ACM Companion on Interactive Surfaces and Spaces* ACM, 2016.

Honors & Awards

Scholarships and Funding

2014-2016 **NSF Research Grant**, National Science Foundation *U.S.A.*

2012-2014 **Goldman Sachs Scholars / Allen Goldman Scholarship**, University of Minnesota *Minneapolis, MN*

2010-2012 **Academy of Math and Science**, Normandale Community College *Bloomington, MN*

2010-2012 **SciMath Scholarship**, National Science Foundation *U.S.A*

Honors

2010-2014 **Phi Theta Kappa**, Normandale Community College *Bloomington, MN*