Carmine Elvezio
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EDUCATION

Columbia University, New York, NY
PhD, Computer Science, Anticipated Graduation May 2021.

Columbia University, New York, NY
Master of Science, Computer Science, Graduated May 2012.

Polytechnic Institute of New York University, Brooklyn, NY
Bachelor of Science, Computer Science, Summa Cum Laude, Graduated June 2010.
NYU-Polytechnic Institute Presidential Scholarship, Lamelson Scholarship.

EXPERIENCE

Columbia University, New York, NY September 2010–Present
PhD Student, Research Staff Associate - Computer Graphics and User Interfaces Lab - Prof. Steven K. Feiner
- Developed Unity messaging framework supporting the creation of 3D widgets and visualizations in Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR).
- Developed 3D interaction techniques supporting local and remote collaboration in AR and VR using hand tracking and motion tracking systems.
- Developed AR maintenance guidance system with tracking environment integration tools, interaction and visualization utilities, and a calibration suite for Unity, using ARToolkit.
- Created interaction and visualization framework to guide users to constrained view poses using 3D graphics in AR/VR.
- Created rotation guidance system for monoscopic HWDs like Google Glass and stereoscopic HWDs like Microsoft HoloLens using Unity, the Canon Mixed Reality Platform and Vuforia.
- Developed a hybrid AR/VR system for 3D urban data visualization using motion tracked head-worn displays, hand-held mobile devices, and a multi-touch tabletop display.
- Extended and maintained the Goblin XNA research platform (2011-2015).
- Created video streaming system to support real-time transmission of rendered AR content.
- Managed 6-12 student project courses per semester under Prof. Feiner (2012–present).
- Teaching assistant: 3D User Interfaces and Augmented Reality, Prof. Feiner (2012–2014).

Columbia University, New York, NY December 2011–June 2012
Research Assistant - Columbia Robotics Group - Prof. Peter Allen
- Created database interface for manipulation of robotic hands and automated grasp selection using brain control interfaces (OpenGL/Qt).

Archemist, New York, NY November 2011–July 2012
Software Engineer - Server Development
- Created 3D model database with support for streaming content to mobile platforms.
- Developed server and web interface to manage 3D model database.
- Worked on streaming system for compact 3D model transmission over network.

Polytechnic Institute of New York University, Brooklyn, NY May 2009–July 2010
Consultant/Research Assistant - Games for Learning Institute - Prof. Joel M. Wein
- Created animation API and graphics tools (DirectX/XNA) for educational games.

SKILLS

Experience with Unity, Unreal, XNA, and Torque 3D.
Experience with Oculus Rift, HTC Vive, OpenVR, Microsoft HoloLens, Vuforia, and ARToolkit.
Programming Skills in C, C++, C#, GLSL, HLSL, Java, Python, PHP, JavaScript, CUDA.
Experience in Software Development on Windows (.NET/COM), Mac OS X, Linux, Android.
Experience with multi-core and GPU development.
Experience in rendering, simulation, and engine development using OpenGL and DirectX.
Experience in UX and UI design (2D and 3D).

PUBLICATIONS

M. Sukan, C. Elvezio, S. Feiner, and B. Tversky, "Providing Assistance for Orienting 3D Objects Using Monocular Eyewear," in Proceedings of the 2016 Symposium on Spatial User Interaction, Tokyo, Tokyo, Japan, 2016, pp. 89–98.

C. Elvezio, M. Sukan, and S. Feiner, "A framework to facilitate reusable, modular widget design for real-time interactive systems," in 2016 IEEE 9th Workshop on Software Engineering and Architectures for Realtime Interactive Systems (SEARIS), Greenville, South Carolina, USA, 2016, pp. 1–7.

O. Oda, C. Elvezio, M. Sukan, S. Feiner, and B. Tversky, "Virtual Replicas for Remote Assistance in Virtual and Augmented Reality," in Proceedings of the 28th Annual ACM Symposium on User Interface Software and Technology, Charlotte, North Carolina, USA, 2015, pp. 405–415.

M. Sukan, C. Elvezio, O. Oda, S. Feiner, and B. Tversky, "ParaFrustum: Visualization Techniques for Guiding a User to a Constrained Set of Viewing Positions and Orientations," in Proceedings of the 27th Annual ACM Symposium on User Interface Software and Technology, Honolulu, Hawaii, USA, 2014, pp. 331–340.

J. Weisz, C. Elvezio, and P. K. Allen, "A user interface for assistive grasping," in 2013 IEEE/RSJ International Conference on Intelligent Robots and Systems, Tokyo, Tokyo, Japan, 2013, pp. 3216–3221.

ABSTRACTS

C. Elvezio, M. Sukan, O. Oda, S. Feiner, and B. Tversky, "Remote Collaboration in AR and VR using Virtual Replicas," in ACM SIGGRAPH 2017 VR Village (SIGGRAPH '17), Los Angeles, California, USA, 2017.

C. Elvezio, M. Sukan, S. Feiner, and B. Tversky, "Travel in Large-Scale Head-Worn VR:Pre-oriented Teleportation with WIMs and Previews," in 2017 IEEE Virtual Reality (VR), Los Angeles, California, USA, 2017.

C. Elvezio, M. Sukan, S. Feiner, and B. Tversky, "[POSTER] Interactive Visualizations for Monoscopic Eyewear to Assist in Manually Orienting Objects in 3D," in Proceedings of the 2015 IEEE International Symposium on Mixed and Augmented Reality, Fukuoka, Fukuoka, Japan, 2015, pp. 180–181.

POSTER PRESENTATIONS

A Framework to Facilitate Reusable, Modular Widget Design. Tristate Workshop on Imaging and Graphics, New York University, April 25th 2016.

Interactive Visualizations for Monoscopic Eyewear to Assist in Manually Orienting Objects in 3D. Tristate Workshop on Imaging and Graphics, New York University, April 25th 2016.

Interactive Visualizations for Monoscopic Eyewear to Assist in Manually Orienting Objects in 3D. Data Science Day, Data Science Institute, Columbia University, April 6th 2016.

Remote Task Assistance in Virtual and Augmented Reality. Data Science Day, Data Science Institute, Columbia University, April 6th 2016.

Interactive Visualizations for Monoscopic Eyewear to Assist in Manually Orienting Objects in 3D. 2015 IEEE International Symposium on Mixed and Augmented Reality (ISMAR), S&T Poster Sessions, September 30th-October 2nd 2015.

Remote Task Assistance in Virtual and Augmented Reality. Tristate Workshop on Imaging and Graphics, Columbia University, April 19th 2015.