Carmine Elvezio

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I'm a recent doctoral graduate from the *Computer Graphics and User Interfaces Lab* at Columbia University, studying **AR/VR/MR/3D graphics, interactions and visualization techniques**, under Prof. Steven Feiner. I've worked on 30+ projects with academic and industry partners, contributed to several open source frameworks, advised 150+ independent research projects, and have published in *ACM UIST, CHI, and SUI, and IEEE ISMAR, VR, and IROS*. Looking for roles with high impact in the fields of spatial computing, XR, graphics, and HCI.

EDUCATION

Columbia University, New York, NY
Doctor of Philosophy, Computer Science, June 2021
Master of Science, Computer Science, 2012; Master of Philosophy, Computer Science, 2021
Advisor: *Professor Steven Feiner*, Thesis: *XR Development with the Relay & Responder Pattern*

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 2019– June 2021
PhD Student—Computer Graphics and User Interfaces Lab (Prof. Steven Feiner)

- Studied and developed **XR (AR/VR/MR) and haptic interaction and visualization** techniques, associated applications, and supporting frameworks across several domains including medicine, maintenance, aerospace, music, and rehabilitation, working with technologies including HoloLens [2], Oculus, SteamVR, and Unity
- Published in *ACM UIST*, *CHI*, and *SUI*, and *IEEE ISMAR, VR,* and *IROS*
- Managed and advised 15–20 independent student project courses per semester under Prof. Feiner
- Teaching assistant for *3D User Interfaces and Augmented Reality* and *Topics in AR/VR*

Columbia University, New York, NY September 2010–August 2019
Research Associate—Computer Graphics and User Interfaces Lab (Prof. Steven Feiner)

- Studied and developed **XR interaction techniques**, associated applications, and supporting frameworks
- Managed and advised 5–15 independent student project courses per semester under Prof. Feiner
- Teaching assistant for *3D User Interfaces and Augmented Reality*

SELECTED PROJECTS (Additional 28 projects listed on my website)

Collaborative Exploration of Urban Data in Virtual and Augmented Reality
A *collaborative AR/VR multi-user* system for visualizing and interacting with social and municipal urban data

Remote Collaboration in AR and VR using Virtual Replicas
A remote expert guides a local technician in repairing an airplane engine using a *hybrid XR system*

SELECTED PUBLICATIONS (Additional 27 publications listed on my website)

Krösl, K., Elvezio, C., Luidolt, L. R., Hürbe, M., Karst, S., Feiner, S., & Wimmer, M. (2020). CatARact: Simulating cataracts in augmented reality. *2020 IEEE ISMAR*. https://doi.org/10.1109/ISMAR50242.2020.00098

Elvezio, C., Sukan, M., & Feiner, S. (2018). Mercury: A messaging framework for modular UI components. *2018 ACM CHI*. https://doi.org/10.1145/3173574.3174162

OPEN SOURCE PROJECTS

Mercury Messaging (*https://github.com/ColumbiaCGUI/MercuryMessaging*)
A framework facilitating XR development through cross-component communication in Unity

GoblinXNA (*http://monet.cs.columbia.edu/projects/goblin/*)
A platform for research on 3D user interfaces, including mobile AR and VR

PATENT APPLICATIONS

Feiner, S., Loeb, G., Grinshpoon, A., Sadri, S. and Elvezio, C., Columbia University, 2020. Systems and methods for augmented reality guidance. US. Patent Application 16/796,645.

Elvezio, C., Sukan, M., Oda, O., Feiner, S. and Tversky, B., Columbia University, 2016. Systems and methods for providing assistance for manipulating objects using virtual proxies and virtual replicas. US. Patent Application 15/146,764.

SKILLS

Graphics Platforms: Unity, Unreal, OpenGL, Direct3D
Languages: C, C++, C#, GLSL, HLSL, Java, Python, PHP, CUDA
Hardware/API: Oculus, Vive, SteamVR, MRTK, HoloLens, Vuforia, ARCore, ARToolkit
OSs: Windows (.NET/COM), Mac OS X, Linux, iOS, Android
3D Graphics: Multi-core rendering, simulation, GPU and game engine development
UX and UI design: JavaScript, XAML, HTML, Figma, CSS, Bootstrap
Project Management: Asana, Trello, Jira, Scrum (with Agile)