

SUMMARY

My area of expertise is 3D interaction and UX design and development for XR. Research interests include effective, intuitive and embodied interactivity in single- and multi-user virtual environments with avatar representations, exploring at the same time the effects in user experience, perception, and cognition.

Keywords: *HCI, XR, 3D Interaction, UX Design, Avatars, Human Perception, User Research*

EDUCATION

PhD **Computer Science**, National and Kapodistrian University of Athens, Greece *June 2020-Fall 2024*

Studying physics-simulated hand interaction in XR and exploring the effects on the user experience. (One publication at IEEE VR, one at IEEE TVCG and one at Frontiers of Virtual Reality)

Advisor: Maria Roussou

Visiting PhD Student, Virginia Tech, USA

October 2023-April 2024

Joined the 3DI Group in the context of a 6-month scholarship awarded by Fulbright and IKY.

Advisor: Doug Bowman

MSc **Computer Science**, National and Kapodistrian University of Athens, Greece *October 2017-March 2020*

Thesis in the field of HCI and VR: *“Effects of Virtual Hand Representation on Interaction and Embodiment in HMD-based Virtual Environments Using Controllers”* (Published at IEEE VR)

Advisor: Maria Roussou

BSc **Computer Science**, National and Kapodistrian University of Athens, Greece *April 2007-February 2016*

Thesis in the field of HCI: *“Authoring tool creation for an interactive digital narratives application”*

Advisor: Yannis Ioannidis

EXPERIENCE

UX Designer and Researcher, ATHENA Research and Innovation Center

November 2019-Present

Researcher and UX designer on multiple national and EU-funded research projects for the Narralive team.

- Leading the design and development process of the team’s product and research efforts related with finding effective ways of user interaction and creating engaging digital experiences.
- **NoFold – XR Tabletop Gaming Platform:** Leading the creation of a web/XR hybrid platform that aims (a) to support creators bring their games to life and playtest them with users online, and (b) to offer players an engaging social gaming platform for their favorite board games. Conducted a study with creators for the requirements of digital tools and published results at the FDG Tabletop Games workshop. A demo of an early prototype has been shown to tens of users at the FDG conference receiving very positive feedback.
- **Narralive Suite:** Leading the design for the unification of the several different tools the team has created for the authoring and experiencing of digital interactive narratives. Still in prototyping phase using Marvel.

Researcher of XR experiences for the EU-funded project CAPHE (<https://www.caphe.space/>).

- Collaborating with a multidisciplinary and multicultural consortium of artists, philosophers, architects and educators, exploring the involvement of communities and artistic participation in hybrid environments. Providing open presentations, tutorials and demos related to XR technology and research.
- **Opera VR performance:** Conceptualized, designed and developed a proof-of-concept for blending opera with real-time VR performance using Unity and VRTK. The result was presented as part of the concert "Orpheus, Lwanda and the Khthónios Journey - The Soul in Spiritual and Hybrid Traditions" in Kenya.

Research assistant for the EU-funded research project BRIDGES (<https://www.bridges-horizon.eu/>).

- Collaborated with an interdisciplinary consortium of European partners with the aim of bringing a holistic solution for co-located group experiences in room-scale immersive XR environments.
- Responsible for finding effective **evaluation methods for XR experiences** by designing and conducting a user study with different methods of interviewing users, the results of which are under peer-review.
- Participated in the design process of 2 use-case scenarios, a **virtual visit to Ancient Athens** and a **firefighter training simulation**, including the gathering of the requirements and the analysis of the specifications. The results of the process have been published at CHI Greece.

Software engineer on the front-end aspects of the EU project EMOTIVE (<https://emotiveproject.eu/>).

- Collaborated with an interdisciplinary consortium of European partners with the aim of using emotional storytelling to change how people cultural experience heritage sites.
- **Narrative tools:** Designed and developed the team's web-based authoring and experiencing systems for digital interactive narratives in cultural heritage using iterative design and the Angular framework. The tools have generated 3 publications and have been used by thousands of users for several other projects.
- **Catalhoyuk VR:** Coordinated the design and implementation of a multi-user VR experience for the archaeological site of Catalhoyuk. Designed and developed all interactions and game logic using Unity, SteamVR and Photon. Successfully evaluated with hundreds of users and made public on itch.io (<https://narrative.itch.io/catalhoyuk-vr>). Published the hive-five mechanic in CHI SocialVR workshop.

Technical student working as a software engineer for CERN's S'Cool LAB Project.

- Responsible for the design and implementation of two websites for the CERN's S'Cool LAB Project, for both the front and the back end. Provision of technical support for CERN's Education Department.

PUBLICATIONS

10. **Lougiakis, C.**, Gonzalez, J., Ganias, G., Katifori, A., Ioannidis, I.-P., & Roussou, M. "Comparing Physics-based Hand Interaction in Virtual Reality: Custom Soft Body Simulation vs. Off-the-Shelf Integrated Solution". In 2024 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). TBD
9. Petousi, D., Katifori, A., Boile, M., Kougioumtzian, L., **Lougiakis, C.**, Roussou, M., Ioannidis, Y. "Revealing Unknown Aspects: Sparking Curiosity and Engagement with a Tourist Destination through a 360-Degree Virtual Tour". Multimodal Technol. Interact. 2023, 7, 51. <https://doi.org/10.3390/mti7050051>
8. Kougioumtzian, L., **Lougiakis, C.**, & Katifori, A., (2023). "“Show your cards!”: What do creators need for the game design process?" In Proceedings of the 18th International Conference on the Foundations of Digital

- Games (FDG '23). Association for Computing Machinery, New York, NY, USA, Article 60, 1–6. <https://doi.org/10.1145/3582437.3587194>
7. Ganas, G., **Lougiakis, C.**, Katifori, A., Roussou, M., Ioannidis, Y., & Ioannidis, I. P. (2023). “*Comparing Different Grasping Visualizations for Object Manipulation in VR using Controllers*”. in IEEE Transactions on Visualization and Computer Graphics, vol. 29, no. 5, pp. 2369-2378, May 2023, doi: 10.1109/TVCG.2023.3247039.
 6. Katifori, A., **Lougiakis, C.**, & Roussou, M. (2022). “*Exploring the Effect of Personality Traits in VR Interaction: the Emergent Role of Perspective-Taking in Task Performance*”. Frontiers in Virtual Reality, 3(860916). <https://doi.org/10.3389/frvir.2022.860916>.
 5. El Raheb, K., Soulis, A., Nastos, D., **Lougiakis, C.**, Roussou, M., Christopoulos, D., ... Rüggeberg, J. (2021). “*Eliciting requirements for a multisensory eXtended Reality platform for training and informal learning*”. In CHI Greece 2021: 1st International Conference of the ACM Greek SIGCHI Chapter (pp. 1–8). New York, NY, USA: ACM. <https://doi.org/10.1145/3489410.3489428>.
 4. Katifori, A., **Lougiakis, C.**, & Roussou, M. (2021). “*The Role of High-fiving for Sustaining Engagement in Social VR Experiences*”. In ACM CHI 2021 SocialVR Workshop. Yokohama, Japan. Retrieved from <https://www.socialvr-ws.com/>.
 3. **Lougiakis, C.**, Katifori, A., Roussou, M., & Ioannidis, I.-P. (2020). “*Effects of Virtual Hand Representation on Interaction and Embodiment in HMD-based Virtual Environments Using Controllers*”. In 2020 IEEE Conference on Virtual Reality and 3D User Interfaces (VR) (pp. 510–518). IEEE. <https://doi.org/10.1109/VR46266.2020.00072>.
 2. Vrettakis, E., **Lougiakis, C.**, Katifori, A., Kourtis, V., Christoforidis, S., Karvounis, M., & Ioanidis, Y. (2020). “*The Story Maker - An Authoring Tool for Multimedia-Rich Interactive Narratives*”. In A. Bosser, D. E. Millard, & C. Hargood (Eds.), Interactive Storytelling. ICIDS 2020. Lecture Notes in Computer Science, vol 12497 (pp. 349–352). Springer, Cham. https://doi.org/10.1007/978-3-030-62516-0_33.
 1. Vrettakis, E., Kourtis, V., Katifori, A., Karvounis, M., **Lougiakis, C.**, & Ioannidis, Y. (2019). “*Narralive – Creating and experiencing mobile digital storytelling in cultural heritage*”. Digital Applications in Archaeology and Cultural Heritage, 15, e00114. <https://doi.org/10.1016/j.daach.2019.e00114>.

TEACHING

Course Assistant

Department of Informatics and Telecommunications, National and Kapodistrian University of Athens, Greece:

- Human-Computer Interaction (YΣ08) – Fall 2018, 2019, 2020, 2021, 2022
- Design and Use of Database Systems (K29) – Spring 2022

Student Mentorship

Department of Computer Science, Virginia Tech, USA:

- “*VirtualThing: Hand Pose Generation for Grasping in XR using Reinforcement Learning and Physics Simulation*” Zhiling Liu, Undergraduate Research, April 2024

Department of Informatics and Telecommunications, National and Kapodistrian University of Athens, Greece:

- “*Heads-up Display: Motorbike driving navigation in real-time with accident detection*” Anastasios Melindonis, BSc Thesis, November 2023
- “*The Narralive Unity plug-in: Bridging the gap between intuitive branching narrative design and advanced visual novel development*”, Dimitra Kousta, BSc Thesis, July 2023
- “*Interactive physical-to-virtual world mapping for the creation of training scenarios in Mixed Reality applications*”, Ioannis Michalopoulos, MSc Thesis, TBD
- “*Evaluation of the Effect of Different Tracker-driven Direction Sources on Continuous Artificial Locomotion in VR*”, Theodoros Mandilaras, MSc Thesis, August 2022

- “*Development and evaluation of three communications methods between an experiment evaluator and an immersed user in virtual reality environments*”, Georgios Ganias, BSc Thesis, September 2021
- “*Development of a tool for creating questionnaires for recording the profile of users in cultural heritage application*”, Ilias Vergos, BSc Thesis, June 2019

SERVICE

Reviewer

- ACM CHI Conference on Human Factors in Computing Systems (CHI 2022, 2023, 2024)
- IEEE VR Conference (2024)
- Virtual Reality Journal (2021)
- International Conference on the Foundations of Digital Games (FDG 2022)

Committee Member

- International Euro-Mediterranean Conference (EuroMed 2020)
- International Conference on the Foundations of Digital Games (FDG 2022)

LANGUAGES

Greek (Native), **English** (Fluent), **French** (Beginner)

SKILLS

- **Programming Languages:** C#, JavaScript, Python, Java, C
- **Development Tools:** Unity, VS Code, Git
- **Unity SDKs and Libraries:** XR Interaction Toolkit, Meta SKDs, SteamVR, VRTK-Tilia, HPTK, Animation Rigging, ML-Agents, Photon, NormCore

AWARDS

- **Fulbright and IKY-State Scholarships Foundation (2023-2024):** Fully funded scholarship for conducting research in a US institution for 6 months as a visiting PhD student.
- **Gary Marsden Travel Award**, ACM SIGCHI, March 2021.

OTHER

- CERN School of Computing - Diploma (September 2015)
- Compulsory military service - Fulfilled (March 2016-December 2016)