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Aytek Aman

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Computer graphics researcher and developer with experience in building novel products focused on medical simulations and augmented reality. Experience in research and development of accelerators for ray tracing. Passionate and experienced about GFX, simulation, AR/VR and game-dev in general.

Experience

Founder - CTO, Deepscope **Oct 2018 - present**

- Co-created world's first mobile ultrasound simulator along with an cross-platform teaching infrastructure. **Deepscope Ultrasound Simulator** is used in major instutitions for ultrasound teaching during pandemic. Deepscope Ultrasound Simulator apps have more than **100k** installs in all platforms (Android, iOS, macOS, Windows) combined.
- Designed **Deepscope Probe**, extremely affordable, AR based probe that works on mobile devices which helps learners to grasp probe movement techniques in an immersive fashion.
- Leading the development on **Deepscope Radiolgoical Anatomy**, an app to teach radiological anatomy using main anatomical planes on detailed 3D anatomical models.

Open source contributor, appleseed renderer **Mar 2017 – Sep 2019**

- Contributions include optimizations to the physically based lighting engine, UI features/bug fixes and infrastructure code.

Researcher and Teaching Assistant, ModVis - Modeling and Visualization group, Bilkent University **Sep 2014 - present**

- Developed a ray-tracing software that utilizes the tetrahedral meshes as a novel acceleration structure for rendering.
- Developed a real-time, natural marker based tracker for an AR project supported by TUBITAK.
- Teaching assistant for computer science (mostly Computer Graphics focused) courses

AR Games Project member, ISMAR 2014 **Sep 2014**

- Designed and developed mini-augmented reality games for mobile devices

Intern, Kodobur **Summer 2010**

- Worked on a small multiplayer strategy game using Unity game engine.
- Implemented animation controllers

Game Programmer, Animax **Feb 2010 - May 2010**

- Worked on integration of realtime, fast cloud rendering methods.
- Designed and developed various functionalities for a 3D platform game using Unity.

Intern, TaleWorlds **Summer 2009**

- Developed a simple animation and mesh viewer using Xna.

Additional Projects

Brake Free **2016**

- Developed and shipped a mobile arcade game that is available on Google Play Store.

Education

PhD Candidate, Computer Science, Bilkent University, GPA: 3.71/4.00 **Sep 2014 - present**
Master of Science, Computer Science, Bilkent University, GPA: 3.68/4.00 **Sep 2011 – Sep 2014**
Bachelor of Science, Computer Science, Bilkent University, GPA: 3.50/4.00 **Sep 2006 – Jun 2011**

Technical Skills

Programming	C++, C#, Python, GLSL, CUDA, CMake, Git
Design and Processing	Slicer, DICOM, Unity, 3Ds Max, Rhinoceros, Figma, Photoshop

Publications

1. **Aman**, **A.**, Demirci, S. & Güdükbay, U. *Compact Tetrahedralization-based Acceleration Structure for Ray Tracing* 2021. arXiv: 2103.02309 [cs.GR].
2. Sahistan, A., Demirci, S., Morrical, N., Zellman, S., **Aman**, **A.**, Wald, I. & Güdükbay, U. *Ray-traced Shell Traversal of Tetrahedral Meshes for Direct Volume Visualization* in *2021 IEEE Visualization Conference (VIS) (to appear)* (Oct. 2021), 1–5.
3. **Aman**, **A.**, Demirci, S., Güdükbay, U. & Wald, I. Multi-level Tetrahedralization-based Accelerator for Ray-tracing Animated Scenes. *Computer Animation and Virtual Worlds* **32,** Article No. e2024, 10 pages (June 2021).
4. Erkoç, Z., **Aman**, **A.**, Güdükbay, U. & Si, H. *Out-of-core Constrained Delaunay Tetrahedralizations for Large Scenes* in *Numerical Geometry, Grid Generation and Scientific Computing (NUMGRID) Conference* (Nov. 2020).
5. **Aman**, **A.**, Akaydın, A. & Güdükbay, U. in *Contemporary Topics in Computer Graphics and Games: Selected Papers from the Eurasia Graphics Conference Series* (eds Isler, V., smet Gürçay, Süher, H. K. & Çatak, G.) (Peter Lang, Istanbul, Turkey, 2020).
6. **Aman**, **A.** & Güdükbay, U. *Fast Tetrahedral Mesh Traversal for Ray Tracing* in *High Performance Graphics (Poster presentation)* (Los Angeles, CA, July 2017).
7. Durupınar, F., Güdükbay, U., **Aman**, **A.** & Badler, N. I. Psychological Parameters for Crowd Simulation: From Audiences to Mobs. *IEEE Transactions on Visualization and Computer Graphics* **22.** Work presented at The ACM SIGGRAPH / Eurographics Symposium on Computer Animation (SCA'16), Zurich, Switzerland, 11-13 July 2016., 2145–2159 (Sept. 2016).
8. Durupınar, F., Güdükbay, U., **Aman**, **A.** & Badler, N. I. *Simulation of Collective Crowd Behavior with Psychological Parameters* in *Simulating Heterogeneous Crowds with Interactive Behaviors* (eds Pelechano, N., Allbeck, J. M., Kapadia, M. & Badler, N. I.) (CRC Press, Boca Raton, FL, 2016), 99–120.
9. **Aman**, **A.**, Akaydın, A. & Güdükbay, U. *Interacting with Boids in an Incompressible Fluid Environment* in *Proceedings of EURASIA GRAPHICS 2014: International Conference on Computer Graphics, Animation and Gaming Technologies* (Ankara, Turkey, Oct. 2014).
10. **Aman**, **A.**, Akaydın, A. & Güdükbay, U. *Interactive Crowd Simulation on Mobile Devices in an Augmented Reality Environment* in *Proceedings of 27th International Conference on Computer Animation and Social Agents (CASA 2014), Short Papers* (Houston, USA, May 2014).
11. Akaydın, A., **Aman**, **A.** & Güdükbay, U. *Interactive Crowd Simulation for Augmented Reality Environments* in *Proceedings of 26th International Conference on Computer Animation and Social Agents (CASA 2013), Short Papers* (Istanbul, Turkey, May 2013).

Awards & Honors

2019 Havelsan AR Hackathon Winner - Developed pickAR: Intuitive ways to pick objects in clustered AR environments
2016 Outsanding Teaching Assistant Award at Bilkent University