Amarnath Murugan
Researcher | Game Developer

Contact

amarnath2105@gmail.com

Links

Portfolio
GitHub
Artwork
LinkedIn

Languages

English(ILR S-5)
Tamil(ILR S-5)

Programming Languages

C#
C
C++
Python
GLSL

Tools & Frameworks

Unity 3D
Unreal Engine
3DS Max
After Effects
Photoshop
Quixel Mixer

Specializations

Graphics Programming
Extended Reality
Game Development
HCI

Education

2015–2019	**SRM Institute of Science & Technology, Kattankulathur** B.Tech in Computer Science (89.15% | Merit Scholarship recipient)

Professional Experience

Since Mar'20	**Technical Director	Manhole Collective** Oversaw the creation of the short film ' *Manhole*' supported by and made in Unreal
Feb'19-Jan'22	**Research Associate + Intern	IDC Scool of Design, IIT Bombay** Conducted research on narratives, education & novel interactions under Prof. Jayesh Pillai
May'21-Mar'22	**Research Intern [Part-time]	Empathic Computing Lab, University of South Australia** Worked on volumetric video editing in VR under Prof. Mark Billinghurst
Jun'18-Jul'18	**Summer Research Intern	IDC School of Design, IIT Bombay** Worked on passively branching live-action VR films under Prof. Jayesh Pillai
Jun'17-Jul'17	**Intern	Merkel Haptic Systems, IIT Madras Research Park** Implemented medical training and visualization demos in AR & VR
Dec'16-Jan'17	**Intern	XR Labs** Created remote monitoring and product visualization demos for the Hololens

Other Experience

Since Feb'21	**Volunteer	SIGGRAPH Research Career Development Committee** Working towards establishing a mentorship program for undergraduate students
Since Jan'21	**Board of Studies Member	CSE Dept, SRM Institute of Science & Technology** Helping define the B.Tech CSE with Games Technology specialization course
Nov'17-Jun'19	**Student Ambassador	Unity Technologies** Conducted events to democratize Game development among students
Aug'16-Jun'19	**Researcher and Team Lead	Next Tech Lab** Led the game development group within the lab. Oversaw projects, recruited, and mentored new members
Feb'18-Feb'19	**Vice-Chair	ACM SIGCHI Chapter, SRM Institute of Science & Technology** Created the first SIGCHI student chapter in India. Conducted events and workshops to promote HCI & game development

Publications

May 2022	Vanukuru, R., Murugan, A., Pillai, J & Do, E. Y. L. **Designing and Studying Social Interactions in Shared Virtual Spaces using Mobile Augmented Reality**	CHI'22 *[Poster]*
Mar 2021	Murugan, A., Vanukuru, R.,& Pillai, J. **Towards Avatars for Remote Communication using Mobile Augmented Reality**	IEEEVR'21 *[Poster]*
Nov 2020	Vanukuru, R., Murugan, A., & Pillai, J. **Dual Phone AR:Exploring the use of Phones as Controllers for Mobile Augmented Reality**	VRST'20 *[Poster]*
Oct 2020	Vanukuru, R., Murugan, A., & Pillai, J. **Dual Phone AR:Using a Second Phone as a Controller for Mobile Augmented Reality**	UIST'20 *[Demo]*
Mar 2020	Sakhardande, P., Murugan, A., & Pillai, J. S. **Exploring Effect Of Different External Stimuli On Body Association In VR**	IEEEVR'20 *[Poster]*

Nov 2019	Murugan, A., Pillai, J. S., & Dev, A. **Cinévoqué: Development of a Passively Responsive Framework for Seamless Evolution of Experiences in Immersive Live-Action Movies**	**VRST'19** *[Poster]*
Nov 2019	Pillai, J. S., Dev, A., & Murugan, A. **Till We Meet Again: A Cinévoqué Experience**	**VRCAI'19** *[Demo]*
Nov 2019	Murugan, A., Balaji, G. A., & Rajkumar, R. **AnatomyMR: A Multi-User Mixed Reality Platform for Medical Education**	**Journal of Physics: Conference Series** *[Paper]*
Sep 2019	JPillai, J. S., Murugan, A., & Dev, A. **Cinévoqué: Design of a Passively Responsive Framework for Seamless Evolution of Experiences in Immersive Live-Action Movies**	**INTERACT'19** *[Paper]*

Achievements

Jun 2022	**'Manhole' - Shortlisted film	Annecy film festival, France** One of the 72 shortlisted films from 1347 submissions from over 100 countries
Nov 2021	**2nd Runner Up	Unreal Short Film Challenge** Competed against renowned studios & filmmakers and won $15k for 3rd place
Nov 2021	**Panelist	VFX Summit** Discussed virtual production and the future of real-time film making
Sep 2021	**Speaker	24 Hours of Chaos** Discussed the technical development of the film 'Manhole'
Nov 2020	**Workshop Organizer	ISMAR '20** Conducted a workshop on Designing a Mobile AR Learning Experiences for K12
Dec 2019	**Winner	Music Hack Day '19, Mumbai** Won best music hack for building a multi-user VR tool for musical collaboration
Nov 2019	**Speaker	IndiaHCI '19** Invited to speak about branching VR narratives at India's largest HCI conference
Dec 2018	**Speaker	Unite India '18** Spoke on 'Interest driven Cinematic VR' at Unity's national conference
Apr 2017	**Winner	Smart India Hackathon '17** Won the World's largest Hackathon at the time for a AR/VR museum pitch

Highlighted Projects

Since Mar'20	**Manhole - Short FIlm**
	• Helped the art team adapt to real-time workflow and collaborate remotely
	• Oversaw the production of the film
	• Implemented a wet and grimy look for a character model based on a *technique* from the 'Last of Us 2'
	• Implemented buoyancy on an interactive fluid-sim plugin by sampling density & velocity buffers. Added smoothing to reduce aliasing issues.
	• Automated retargeting of over an hour of captured mocap data
Since Feb'20	**Graphics Programming**
	• Implementing compute shaders to edit point clouds derived from RGBA videos.
	• Implemented a multi-threaded CPU path-tracer in C++ that supports dielectrics, volumes and BVH *[Link]*
	• Wrote interactive raymarching and SDF shaders to generate an animated model of 22 from Souls, and to visualize the 2D & 3D mandelbrot set *[Shadertoy]*
Aug'20-Dec'20	**Avatars for Mobile Social AR**
	• Implemented a system that procedurally animates avatars based on the phone's movement & rotation, based on heuristics derived from a video analysis of user motion in AR.