

# Amarnath Murugan

Researcher | Game Developer

## Contact

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## Links

[Portfolio](#)  
[GitHub](#)  
[Artwork](#)  
[LinkedIn](#)

## Languages

English(ILR S-5)  
Tamil(ILR S-5)  
Japanese(ILR S-0)

## Programming Languages

C#  
C  
C++  
Python  
GLSL

## Tools & Frameworks

Unity 3D  
3DS Max  
After Effects  
Photoshop

## Specializations

Extended Reality  
Gamedev  
HCI

## Education

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

## Experience

Since Feb'19 **Research Assistant | IDC School of Design, IIT Bombay**  
Researching on narratives, education & novel interaction techniques in XR, while assisting development of student projects

Nov'17-Jun'19 **Student Ambassador | Unity Technologies**  
Worked on democratizing XR and Game development among students

Aug'16-Jun'19 **Researcher and Team Lead | Next Tech Lab**  
Led the HCI group within the lab and was involved in multiple XR projects

Feb'18-Feb'19 **Vice-Chair | ACM SIGCHI Chapter, SRMIST**  
Promoted the field of HCI through workshops and technical events

Jun'18-Jul'18 **Summer Research Intern | IDC, IIT Bombay**  
Conducted research on interactive movie experiences in VR

Jun'17-Dec'17 **Intern | Merkel Haptic Systems, IIT Madras Research Park**  
Implemented POCs in HoloLens pertaining to the Health care industry

Dec'16-Jan'17 **Intern | XR Labs**  
Created a remote monitoring demo in HoloLens

## Publications

Nov 2020 Rishi Vanukuru, Amarnath Murugan, and Jayesh Pillai. **Dual Phone AR: Exploring the use of Phones as Controllers for Mobile Augmented Reality** | VRST '20

Oct 2020 Rishi Vanukuru, Amarnath Murugan, and Jayesh Pillai. **Dual Phone AR: Using a Second Phone as a Controller for Mobile Augmented Reality** | UIST '20

Mar 2020 Prabodh Sakhardande, Amarnath Murugan, and Jayesh S. Pillai. **Exploring Effect Of Different External Stimuli On Body Association In VR** | IEEEVR '20

Nov 2019 Amarnath Murugan, Jayesh S. Pillai, and Amal Dev. **Cinévoqué: Development of a Passively Responsive Framework for Seamless Evolution of Experiences in Immersive Live-Action Movies** | VRST '19

Nov 2019 Jayesh S. Pillai, Amal Dev, and Amarnath Murugan. **Till We Meet Again: A Cinévoqué Experience** | VRCAI '19

Nov 2019 Amarnath Murugan, Ganesh A. Balaji, and R. Rajkumar. **AnatomyMR: A Multi-User Mixed Reality Platform for Medical Education** | Journal of Physics: Conference Series. Vol. 1362. No. 1. IOP Publishing, 2019

Sep 2019 Jayesh S. Pillai, Amarnath Murugan, and Amal Dev. 2019. **Cinévoqué: Design of a Passively Responsive Framework for Seamless Evolution of Experiences in Immersive Live-Action Movies** | INTERACT '19

## Honors & Awards

Nov 2020	<b>Workshop Organizer   ISMAR '20</b> Conducted a workshop on Designing a Mobile Augmented Reality Learning Experience for K12
Dec 2019	<b>Best Hack   Music Hack Day '19, Mumbai</b> Won best music hack for building a multi-user VR tool for musical collaboration involving digital twins
Nov 2019	<b>Speaker   IndiaHCI '19</b> Invited speaker at India's largest HCI conference under 'Out of India' section
Dec 2018	<b>Speaker   Unite India '18</b> Spoke on 'Interest driven Cinematic VR' at Unity's national conference ( <a href="#">Link</a> )
Apr 2017	<b>Winner   Smart India Hackathon '17</b> Bagged the first place in the World's biggest Hackathon at the time

## Highlighted Projects

Since Feb'20	<b>Graphics Programming</b> <ul style="list-style-type: none"><li>Implemented a multi-threaded CPU path-tracer in C++ that supports dielectrics, volumes and BVH based on the Ray Tracing in One Weekend series</li><li>Wrote shaders to visualize the Mandelbrot set and Mandelbulb in Shadertoy</li></ul>
Since June'18	<b>Cinévoqué</b> <ul style="list-style-type: none"><li>Designed and implemented a system that allows creation of branching storylines for stereoscopic live-action VR films in Unity. The decisions are based on the viewer's gaze but the changes in the experience are passive.</li><li>Created three responsive VR films that run on this system. The largest of which had eight possible storylines of different genre.</li></ul>
Since June'18	<b>Scholar</b> <ul style="list-style-type: none"><li>Implemented and designed content for a system that allow teachers to moderate and conduct co-located AR sessions in physical classrooms</li><li>Developing and designing a networked mobile AR app for remote learning</li><li>Assisted with multiple on site experiments in urban and rural middle schools</li></ul>
Mar'19-Jun'19	<b>Body Association VR study</b> <ul style="list-style-type: none"><li>Helped design an experiment that compares the individual effect of visuomotor, olfactory and tactile stimuli on embodiment in VR</li><li>Implemented a inverse kinematics based avatar in a VR environment that can be controlled externally by the experimenter. The application also communicated with arduino to trigger olfactory stimuli and to record physiological data along with the events in VR</li></ul>

## Courses

Sep 2019	<b>Monsoon HCI Course 2019   IIT Bombay</b> A two-week intensive course that teaches HCI and UX through a hands-on approach. My team worked on a net banking solution for kids that could inculcate good financial habits
Feb 2020	<b>Quantitative Research Methods Course 2020   IIT Bombay</b> An accelerated course that covers quantitative research methods in HCI. During which I got to design, conduct and analyze an experiment meant to study time perception while playing games