

Madhu Ratnakar

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PIPELINE TD | TECHNICAL ARTIST

Motivated engineer and artist with a strong Computer Engineering foundation, passionate about developing tools and solutions for VFX, games, and creative pipelines to boost productivity and innovation.

EDUCATION

Texas A&M University – MS Visualization (2022 – 2024)

Focused on Technical Art, VFX, Game Mechanics, Game Engine and Tool Development using Houdini, Unreal Engine, Maya, Blender, and Adobe Creative Suite products

Virginia Tech – BS Computer Engineering/Minor in Mathematics (2017 – 2021)

Completed coursework in Machine Learning, Video Game Design, Embedded Systems, Digital Image Processing, Computer Network and Security, Cryptography, Computer Vision, and Applied Software Design.

EXPERIENCE

Hornet

Junior Pipeline TD Freelance (Apr 2025 – Present)

- Develop and maintain internal tools to support CG artist workflows, including front-end tools for producer file organization and shot tracking.
- Investigate and resolve pipeline bugs, perform software upgrades, and contribute to R&D for artist feature requests.
- Collaborate with CG and Compositing Leads to ensure production tools meet evolving project requirements.

Pipeline Technical Intern (Jan 2025 – Apr 2025)

- Responded to help desk tickets, installing software and resolving administrative hardware issues for artists, including support for a high-security client project.
- Assisted the Pipeline team in debugging tools, testing production workflows, and documenting fixes.
- Built foundational knowledge in production pipeline infrastructure, contributing to a smooth transition into a Junior TD role.

UpUnikSelf

Frontend Developer Intern (Aug 2024 – Nov 2024)

- Developed and refined responsive website components using React, Angular, HTML5, CSS, TypeScript, and Tailwind CSS, ensuring alignment with brand and business goals.
- Conducted UI testing and optimization to enhance usability, accessibility, and cross-browser compatibility through close collaboration with the design team.

Texas A&M

Graduate Teaching Assistant (Aug 2022 – Aug 2024)

- Led weekly labs and held office hours to provide personalized guidance on software development using Python and Maya for Visual Computing and Visualization courses.
- Assessed assignments and tracked student performance, delivering constructive feedback grounded in industry standards and best practices in visualization workflows.

USPTO

Computer Engineering Patent Examiner (May 2021 – Jun 2022)

- Evaluated patent applications in Art Unit 2117 related to computer error control, reliability, and control systems to determine patent eligibility.
- Conducted comprehensive prior art searches in patent and scientific literature databases to assess novelty and non-obviousness for patentability.

NT-Concepts

Software Developer Intern (June 2019 – Aug 2020)

- Built an interactive web mapping application for a nonprofit client using React.js and the ArcGIS API, participating in the full software development lifecycle.
- Collaborated in an Agile/Scrum team using Azure DevOps, Jira, and Confluence for sprint planning, standups, and retrospectives.
- Gained mentorship under a senior front-end lead, strengthening skills in UX/UI design, modern front-end frameworks, and GIS integration.

USPTO

Software Developer Extern (Jun 2018 – Aug 2018)

- Optimized Windows system environments for test automation, improving readiness for QA workflows.
- Designed visual assets and conducted technical research to support internal policy presentations.

FEATURED PROJECTS

Dynamic Cloud Tool - Graduate Capstone Project

Developed and presented my own realistic dynamic cloud tool using Houdini Pyro physics-based simulations focusing on optimization and customizability for real-time game engines

“Farewell” – Animation Summer Industry Course

Lead VFX Artist, Rigger, and Microdresser. Also helped with procedural modeling and texturing. Mentored by industry professionals from DreamWorks and Meta

48-Hour Game Jams - Chilleneum 2023 AND 2024

Lead Programmer and Game Mechanic for my team. Created games “With Hearts Aglow” and “Save My Eggs” using Unreal Engine. Also helped with UI and animations

Climate Change Awareness – Virtual Reality Project

Engineered a VR application in Unity for a collaborative project and conducted user studies to assess its effectiveness in promoting climate change awareness in a college setting

IOT-Enabled Trash Collecting Rover – Embedded Systems

Developed a trash-collecting rover using IoT and MQTT software, integrated Pixy Camera for navigation and detection, and implemented a robotic arm for automated sorting/disposal

SKILLS

Programming - C++, C#, C, Python, Java, VEX, JavaScript, Angular, Typescript, Bash, Verilog, MATLAB, HTML, CSS, SASS, Object-oriented Programming, React.js, Next.js, Processing.js, Vulkan, OpenGL, AI, Computer Vision, Linux

Software - Houdini, Unreal Engine, Maya, Unity, Blender, Ayon, Shotgun, Adobe Creative Cloud Software, ZBrush, Autodesk Inventor, Esri, Visual Studio, GitHub, Jira, Figma

Technical Art - VFX, Video Game Design and Mechanics, Rigging, 2D/3D Animation, 3D Modeling, Physics-based Simulation, Shader Programming, Niagara, Unreal Blueprints

OTHER

Volunteering

- SIGGRAPH 2024, DENVER - Selected as a student volunteer, I was involved in facilitating conference activities, primarily the VR theater and VR kiosks. I helped attendees experience cutting-edge Virtual Reality technology, providing technical assistance and ensuring smooth operation and high-quality immersive experiences

Certifications

- Horner - Certified AWS Cloud Practitioner (2025)
- Google UX Design - Professional Certificate (2024)