

# Manas Chaudhary

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## Summary

Undergrad IIT Roorkee(2018-2022). Computer Science and software development enthusiast with some experience in graphics programming, low level programming, web technologies, game development, information security and system administration.

## Projects

### Rootex

🔧 C++17, DirectX, BULLET

- An advanced game engine with support for 3D games as a collaboration under SDSLabs, covered by GamesFromScratch in a [Youtube Video](#)
- Uses a modern ECS architecture, an in-house built rendering engine atop the Direct3D11 API, a visual level editor using ImGui, Lua based scripting API
- Rendering capacities include phong shading, normal mapping, custom post process/vertex/pixel shaders, hardware instancing, LOD generation, skeletal animations, skybox based reflection/refraction

### xrdesktop

🔧 C, GLIB, VULKAN

- A library for XR interaction with classical desktop compositors on linux
- Added 3D rendering capabilities to the Vulkan pipeline
- Wrote a glTF loader to enable users to load custom environment scenes for their virtual desktop experience

### openargus

C++, EIGEN

- Cloth simulation framework intended as a successor to ARCSim [Narain et al. 2012] and Argus [Li et al. 2018]
- Implemented spring based stretch+bending force models, finite element stretching models with support for implicit and explicit integrators

### Outrun Chase

🔧 GODOT

- An outrun themed, multiplayer, cross-platform, thrilling racing + shooting game
- Built on the open source Godot engine during a hackathon and then extended to a full fledged game, presented in [GodotCon 2021](#)
- I led the project, worked on adding all the VFX and constructing the maps. The entire game has been documented [here](#).

### Backdoor

🔧 🌐 PHP

- Information security platform hosting CTF challenges and competitions, created by SDSLabs
- Co-maintainer of the platform
- Written in PHP, based on the MVC architecture

## CTF Profile

I do all categories in CTFs with Reverse Engineering being my biggest forte. I have also made a few challenges on Backdoor CTF platform.

|      |   |                                |
|------|---|--------------------------------|
| 2023 | <b>281st to finish all 10 levels</b> , Flare-On challenge by Mandiant             | <a href="#">Online</a>         |
| 2023 | <b>176th to finish all 13 levels</b> , Flare-On challenge by Mandiant             | <a href="#">Online</a>         |
| 2022 | <b>428th to finish all 11 levels</b> , Flare-On challenge by Mandiant             | <a href="#">Online</a>         |
| 2022 | <b>2nd</b> , International CyberSecurity Challenge, part of team Asia             | <a href="#">Athens, Greece</a> |
| 2021 | <b>1st</b> , CSAW ESC World Finals, part of team SDSLabs                          | <a href="#">Online</a>         |
| 2021 | <b>2nd in India, 15th globally</b> , CSAW CTF World Finals, part of team SDSLabs  | <a href="#">Online</a>         |
| 2021 | <b>353th to finish all 10 levels</b> , Flare-On challenge by FireEye              | <a href="#">Online</a>         |
| 2021 | <b>14th</b> , ACSC CTF Qualification  | <a href="#">Online</a>         |
| 2021 | <b>2nd in India, 17th in world</b> , CSAW CTF Qualification, part of team SDSLabs | <a href="#">Online</a>         |
| 2020 | <b>14th globally</b> , CSAW CTF 2020, part of team InfosecIIITR                   | <a href="#">Online</a>         |
| 2020 | <b>3rd globally</b> , CSAW ESC 2020, part of team SDSLabs                         | <a href="#">Online</a>         |
| 2020 | <b>2nd</b> , Github CTF 2020  | <a href="#">Online</a>         |

## Achievements

|      |  |                             |
|------|--|-----------------------------|
| 2022 | <b>Gold Medal</b> , DevOps hackathon, Inter IIT Tech Meet 2022           | <a href="#">Online</a>      |
| 2021 | <b>Third Prize</b> , Reach Universities Unchained Bounty Hack            | <a href="#">Online</a>      |
| 2020 | <b>Blockchain Track Winner(Portis)</b> , Hackinout 7.0                   | <a href="#">Online</a>      |
| 2020 | <b>Runner up - Gaming Apps Category</b> , Hackathon Atmnirbhar Bharat 59 | <a href="#">Online</a>      |
| 2019 | <b>Gold Medal</b> , Coding Hackathon, Inter IIT Tech Meet 2019           | <a href="#">IIT Roorkee</a> |
| 2019 | <b>Runner up</b> , Microsoft Codefundo++ 2019                            | <a href="#">IIT Roorkee</a> |
| 2018 | <b>All India Rank 991</b> , KVPY Fellowship 2017                         | <a href="#">India</a>       |

## Experience

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### IIT Delhi

PROJECT SCIENTIST

April 2025 - Present

- Working on Generalized position-based dynamics and differentiable simulation for cloth

### Chorus One

PLATFORMS ENGINEER

November 2022 - Feb 2025

- Manage orchestration and deployment of validator nodes of various cryptocurrency networks on bare metal machines.

### IIT Delhi

PROJECT SCIENTIST

June 2022 - September 2022

- Working on an OpenGL based PBR renderer for neurosurgery simulation research focussing heavily on realtime VFX and mesh processing
- Added SOFA framework based algorithm for mechanically correct membrane cutting simulation.

### Collabora

GRAPHICS PROGRAMMING INTERN

November 2021 - May 2022

- Worked on Panfrost, an open source graphics driver for the ARM Mali GPUs part of mesa3d, the mainstream graphics drivers for Linux.
- Implemented Vulkan secondary command buffers for these GPUs, which don't have native secondary command buffer support.

### Google Summer of Code 2021

GSoC STUDENT UNDER XRDESKTOP ORGANISATION

Summer 2021

- A library for XR interaction with classical desktop compositors on Linux.
- Added support for 3D model rendering from glTF format allowing the users to load custom environment scenes along with their virtual workspace in VR.

### Microsoft India

SOFTWARE ENGINEERING INTERN

Summer 2021

- Wrote a C++/CLI application to fetch DNS records of a requested URL and exposed the code through a C#/dotnet wrapper.
- The application was containerised in Windows Docker containers and orchestrated with K8s+KEDA according to the load of queries.

### Microsoft India

SOFTWARE ENGINEERING INTERN

Summer 2020

- Worked on the frontend of an internal guests portal of Microsoft
- Used ReactJS with styled components

## Skills

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|                             |   |
|-----------------------------|---|
| <b>General</b>              | C, C++, Python, Javascript, X86 Assembly, Visual Studio, IntelliJ, Docker |
| <b>Graphics Programming</b> | Direct 3D 11, Vulkan, ImGui   |
| <b>Security</b>             | IDA Pro, Ghidra, pwntools, gdb, wireshark                                 |
| <b>Web Development</b>      | ReactJs, express.js, Flask, Sqlite  |
| <b>DevOps</b>               | Kubernetes, Ansible, Terraform, Prometheus                                |

## Extracurricular Activity

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### SDSLabs | Software Development Section, IIT Roorkee

Secretary

[HTTPS://SDSLABS.CO/](https://sdslabs.co/)

November 2018 - May 2022

- Actively participate in group meetings, internal hackathons, organised events/lectures
- Participated and won external hackathons and CTFs

### InfosecIITR, IIT Roorkee

Member

[HTTPS://INFOSECIITR.IN/](https://infoseciitr.in/)

November 2018 - May 2022

- Active participation in CTFs
- Lectures/CTFs to promote Information Security in campus

### The Terasology Foundation

Maintainer

[HTTPS://GITHUB.COM/MOVINGBLOCKS/TERASOLOGY](https://github.com/movingblocks/terasology)

January 2020 - present

- The Terasology project was born from a Minecraft-inspired tech demo and is becoming a stable platform for various types of gameplay settings in a voxel world.
- My contributions involve fixing bugs in gameplay modules and working towards improving/adding to the world generation algorithms it provides.