Aritra Bhakat

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🌐 *arrebarritra.github.io* • ⌂ *arrebarritra* • **in** *aritra-bhakat*

Education

Aug 2022–Dec 2024	**Master's Programme in Computer Science**, *Visualisation and Interactive Graphics Track*, KTH Royal Institute of Technology, Stockholm
Aug 2019–Dec 2024	**Degree Programme in Engineering Physics**, KTH Royal Institute of Technology, Stockholm GPA 4.75/5
Jul 2022–Nov 2022	**Exchange Studies**, *Computer Science*, University of Melbourne, Melbourne 81.5% WAM

Work experience

2021–Present	**Technical support, part time**, PrBh Redovisningsbyrå AB, Stockholm Roles: ○ Technical support ○ Implementing solutions to automate accounting workflow ○ Building and maintaining website
Summer 2020	**Summer research project**, NORDITA, Stockholm ○ Implemented an interactive visualisation for time-dependent data from an asteroid erosion simulation. ○ Visualisations were published in the resulting paper.

Skills

Languages	C++, C#, Java, Javascript, GLSL, HLSL	**Graphics APIs**	OpenGL, Vulkan
GPGPU	CUDA, Compute shaders	**Scripting**	Python, MATLAB
Parallel/ distributed	Slurm, MPI, OpenMP	**Misc/ software**	Git, Bash, CMake, Unity, COMSOL

Projects

Feb 2024–Dec 2024
Master thesis: Approximate Opacity Optimisation, *C++, OpenGL, GLSL*
Implemented a visualisation algorithm which hekps reveal important data in dense 3D geometry. Used approximation methods to improve performance.

Nov 2024–Feb 2024
Vulkan Path Tracer, *C++, Vulkan, GLSL*
Physically based path tracer in Vulkan utilising hardware accelerated ray tracing. Implemented multiple importance sampling, with direct light sampling and material BSDF sampling for faster convergence. Implemented a comprehensive material model.

May 2023
Soft Body Simulation, *Unity, C#, HLSL*
A GPU soft body simulator. Implemented in compute shaders using the XPBD method, with graph colouring to cluster independent constraints.

Nov 2023–Jan 2024
Isosurface renderer with implicit kD-trees, *C++, OpenGL, GLSL*
An isosurface renderer using implicit kD-tree to skip space and quickly evaluate intersections, implemented on the GPU.

Sep 2023–Oct 2023
Rolling Reactions VR, *Unity, C#*
Implemented wheelchair physics and integrated a fluid simulation for a VR group project: a VR experience where the player moves in a wheelchair and performs chemistry experiments.

Volunteering

Djurgårdens IF Cricketförening, *Cricket club*, Stockholm
- Board member
- Youth section: coaching, organising tournaments, applying for grants, administration
- Senior teams: running training sessions, captaining the 1st XI team, organising equipment orders

Languages

Swedish, English, Bengali