

Isaac B. Lagoy

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Education

Texas A&M University, College Station, Texas
Bachelor of Science, Computer Science

05/2027

- 4.0 GPA
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Projects

Basilisk Game Engine - github.com/Loffelt/BasiliskEngine

- Developed physical models with six degrees of movement for real-time rigid body simulations using Runge-Kutta methods to improve accuracy and quaternions for interpolating rotations.
- Designed a bottom-up surface area heuristic (SAH) bounding volume hierarchy (BVH) containing axis aligned bounding boxes to reduce the frequency of expensive collision algorithm calls.
- Implemented Gilbert-Johnson-Keerthi and the Expanding Polytope Algorithm to efficiently determine the penetration vector between two convex polyhedra.
- Implemented the Separating Axis Theorem to improve oriented bounding box collisions and to increase the number of complex meshes pruned during broad phase collision detection.
- Programmed a pipeline for generating contact manifolds using Sutherland-Hodgman and Graham Scan.
- Designed a top-down SAH BVH for dividing features of a mesh, reducing the time it takes to access features and the number of calls to ray intersection algorithms like Möller-Trumbore.
- Generated user stories to develop an intuitive package interface and internal package data structures.
- Created a website to host development logs and documentation - basilisk-website.vercel.app/

Independance Day Game - isaacblagoy.itch.io/independance-day

- Created a process for cutting rigid bodies, reconstructing their meshes, and recomputing their masses and inertia tensors using tetrahedralization.
- Designed an animation system for controlling skeletons made of rigid bodies and springs by interpolating between procedurally generated keyframes.

Dicey Decks Game - gizmo-0918.itch.io/dicey-decks

- Procedurally generated spells and multilevel dungeons using arbitrarily sized rooms and enemy layouts.
- Implemented enemy AI for detecting the player, making evasive manoeuvres, and targeting attacks.

Portfolio Website - www.isaacblagoy.com

GitHub - github.com/IsaacLagoy

Work Experience

iSTAR, College Station, Texas

12/2023-Present

Student Intern

- Assist in student-led projects from web development to determining the network trust of programmable logic controllers.
- Contributed to developing an online platform for tracking student engagement during labs by designing with CSS and IBM Carbon Design components for SvelteKit.
- Developed row-level security for a Supabase hosted database and integrated it into a website in conjunction with client-side data validation.
- Significantly contributed to designing an introductory lab for students using Docker on multiple operating systems, outlining the use of images, containers, and volumes.

Structurology, League City, Texas

06/2024-08/2024

Programmer

- Worked as the sole programmer in the forensics branch, converting the needs and wants of engineers into applications.
 - Automated tedious tasks performed by engineers to improve workflow using Power Automate for Microsoft Teams.
 - Developed programs to autofill document templates and reports from company databases.
 - Developed automated notification and scheduling programs to improve coordination between engineers.
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Extracurriculars

Texas A&M Game Developer's Club

01/2024-Present

- Regularly compete in game jams and present slideshows to demo new Basilisk Engine features and performance increases.
- Work with other students to design, program, and test game mechanics and level design.

Captain of High School UIL Computer Science Team

08/2021-05/2023

- Led a team of three students, competing using the Java programming language.
 - Organized practices, tryouts, and weekly meetings.
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Technical Skills/Awards

- Languages and Frameworks: Python, C++, Java, TypeScript, HTML, CSS, SvelteKit, IBM Carbon Design
- Texas A&M Game Developer's Spring 2024 Programming Award
- Texas A&M Game Developer's Fall 2024 Game Design Award