

# Evan Bertis-Sample

Personal: [evanbs.com](https://evanbs.com) | GitHub: [github.com/Evan-Bertis-Sample](https://github.com/Evan-Bertis-Sample) | LinkedIn: [tinyurl.com/3uauzkzp](https://tinyurl.com/3uauzkzp)  
esample21@gmail.com | (941) 879-7687

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## EDUCATION

**Northwestern University** | Evanston, Illinois

Expected June 2026

*BS/MS, Computer Science | Minor, Data Science & Engineering*

GPA: 3.6

Relevant Coursework: Database Schema Design, Entity-Component Systems, 3D Computer Graphics, Human Centered Design, Transmission Protocols (TCP, UDP), Application-Layer Protocols, Wireless Protocols for IOT, API Design, Data Structures & Algorithms, Systems Programming

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## TECHNICAL SKILLS

Programming Languages: C#, C++, C, Python, SQL, HTML, CSS, JavaScript, MATLAB, GLSL, HLSL

Tools/Frameworks: Unity, Arduino, AWS, Amazon S3, Amazon RDS, EC2, Elastic Beanstalk, Dear ImGui, FMOD, Django, HTMX, WebGL, OpenGL

Productivity: Git, GitHub, Jira, Confluence, Notion, Microsoft Office, Slack

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## EXPERIENCE

Northwestern Formula Racing | Evanston, Illinois

September 2022 - Present

**Data Acquisition (DAQ) Lead Engineer** | [Serialization Library](#) | [Wireless Communication Library](#)

- Oversaw nine projects focused on the acquisition and analysis of metrics in a Formula-style racecar, covering areas such as embedded systems development and cross-platform desktop application development
- Collaborated with Prof. Ilya Mickelson to develop an embedded systems curriculum, creating a Django-based website to host learning materials (lectures, writeups, lab materials) used by 25+ new members for electrical education
- Led the development of a live data analysis system using radio-based data transmission for NU's Formula Racecar
- Implemented a serialization library in C++ to maximize data throughput over radio and standardize car records with a custom compact binary encoding protocol, reducing data frame size by 95% compared to JSON
- Designed and implemented a custom wireless protocol built on LoRa for reliable data transfer in a wireless telemetry system, achieving a 98.9% packet delivery success rate at a 500m distance using LoRa's maximum data rate.

Northwestern's Center for Connected Learning | Evanston, Illinois

September 2023 – June 2024

**Full-Stack Web Developer** | [Morfli](#) | [Blog Post](#)

- Developed Morfli, a student-driven learning platform used to teach NU's Material Science Courses, in Django and HTMX
- Collaborated with PhD student, Jacob Kelter, to add a Google Docs inspired commenting system into Morfli, promoting student-instructor communication about learning materials, and nurture a stronger relationship between instructors and students
- Created web-based curriculum-editing tools with Django for professors to tailor template courses for optimized instruction
- Utilized Django's Object-Relational Mapping (ORM) API to create polymorphic models of comments, building a scalable backend that supports image comments, text comments, and comment replies while minimizing complexity

Overture Games | Chicago, Illinois

June 2023 – October 2023

**Full-Stack Game Engineer** | [Intervallic Steam Page](#) | [Blog Post](#)

- Developed Intervallic, a commercial music game released on Steam aimed to reduce burnout among music students
- Designed a level-generator tool, reducing level creation time from 3 hours to 15 minutes per level, saving 60+ hours of work
- Implemented a hierarchical finite state machine in C# to control game state, packaged with a GUI-based state debugger
- Devised a Level QA process to guide a team-wide effort to ensure levels were fair and not frustrating before release
- Painted modular platformer tile sets in Photoshop to drastically improve visual readability and address user feedback

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## PERSONAL PROJECTS

**WebGL Game Engine** | [Try the demo!](#) | [Source](#) | [Blog Post](#)

January 2024 - April 2024

- Engineered a custom game engine using JavaScript, WebGL, HTML and CSS from scratch, capable of supporting dynamic lighting, multiple cameras, dynamic materials, and importing custom 3D models
- Implemented an entity-component system, allowing for the scalable description of game behavior through modular components
- Created an inverse kinematic system using the FABRIK method to procedurally animate the player character's movement
- Built a material system that allows for unique fragment-vertex shader pairs per material, enabling for stronger technical art support for special materials like vertex-animated blackholes, skyboxes and different lighting models
- Designed an easy-to-use interface to visualize different lighting models, change lighting conditions, and change materials of objects

**Vincentius** | [Play Vincentius](#) | [Source](#) | [Blog Post](#)

October 2021 - March 2022

- Spearheaded development of Vincentius, a 2D platformer programmed in C# using the Unity Engine, garnering 1000+ plays on Itch.io
- Crafted engaging movement mechanics and level interactions, fostering a small hardcore speed-running community
- Developed a suite of GUI-based tools for dialogue and level creation to expedite story-writing and level-design processes
- Designed a light-weight markup language using a custom-built C# interpreter to allow for the firing of gameplay and story events within character dialogue, allowing for the creation of more impactful story-moments
- Hand-crafted all art assets in Vincentius, including tile sets, character animations, environment art, and UI elements