

# BESS HAGAN

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## EDUCATION

### Bachelor of Arts in Computer Science, Minor in Data Analytics

Expected: 12/2025

Southwestern University, Georgetown, TX

GPA: 4.0, Dean's List, Finch Merit Scholar

- Poster Presentation, 2025 Research and Creative Works Symposium
- Selected Coursework: Capstone in Software Engineering, Machine Learning, Algorithms, Database Management, Environmental GIS
- Future coursework: Programming Languages, Remote Sensing

### Associate of Science in Computer Science

05/2023

Temple College, Temple, TX

GPA: 4.0, President's Honor List

## TECHNICAL SKILLS

**Languages & Tools:** Python, R, C++, SQL, NoSQL, HTML, PHP, x86 Assembly, YAML, CSV, JSON, XML, VS Code, GitHub Desktop, Godot (GDScript), ArcGIS Pro

**Libraries & Frameworks:** PyTorch, NumPy, Pandas, scikit-learn, Matplotlib, ggplot2, dplyr

**Data Analytics & GIS:** Data Pipelines, Exploratory Data Analysis (EDA), Data Visualization, Spatial Data Analysis, Geoprocessing, Hypothesis Testing

**Machine Learning & AI:** Logistic/Linear Regression, Decision Trees, KNN, K-Means Clustering, Diffusion Models (conditional & unconditional), UNet, Transformers, Procedural Content Generation (PCG), A\* Search

## EXPERIENCE

### Student Researcher, SURF 2025 (Procedural Content Generation)

05/2025 – Present

Southwestern University, Georgetown, TX

- Trained and evaluated conditional and unconditional diffusion models with UNet architectures on Super Mario Bros. level data using Python and PyTorch.
- Developed early stopping, model checkpointing, cross-entropy loss, and A\* solvability metrics for benchmarking generative performance.
- Built Python tools for data processing, GUI-level composition, runtime visualization, and statistical evaluation; tracked tasks and bugs through GitHub Issues.
- Designed a multiplayer storytelling game using Flask, JavaScript, and LLMs; implemented win conditions and interface logic for turn-based narrative control.

### Student Software Engineer, Capstone: Senior Seminar in Software Engineering

01/2025 – 05/2025

Southwestern University, Georgetown, TX

- Collaborated with an Agile team using GitHub for version control, feature branching, and issue tracking to develop an educational game in Godot Engine for teaching data science to middle school-aged children.
- Built a drag-and-drop mini-game with a state-driven tutorial system and dynamic validation logic.
- Integrated a YAML-based dialogue manager and tween animations to support in-game guidance and feedback.

### Student Researcher

05/2024 – 08/2024

DREU Program, INVITE Institute, University of Illinois Urbana-Champaign, Champaign, IL

- Built a SQL-to-Python pipeline for analyzing student log data in a virtual learning environment.
- Applied Ordered Epistemic Network Analysis (ONA) to study engagement and persistence.
- Partnered with developers to trace and resolve logging errors between the game and database.

### Student Ambassador

06/2022 – 07/2022

Temple College Temple, TX

- Supported faculty by mentoring middle school students in robotics, circuitry, and coding basics.

## LEADERSHIP ACTIVITIES

- **Chapter President**, Upsilon Pi Epsilon National Honorary Computer Science Society 08/2024 – 05/2025
- **Vice President**, Lambda Theta Chapter, Phi Theta Kappa Honor Society 07/2022 – 05/2023