# 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, Programming Languages, Environmental GIS, 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, Java, C++, R, JavaScript, SQL, NoSQL, HTML, PHP, x86 Assembly, GitHub Desktop, ArcGIS Pro
**Libraries & Frameworks**: PyTorch, scikit-learn, NumPy, Pandas, Matplotlib, Flask, ggplot2, dplyr
**Data Analytics & GIS**: Data Pipelines, Exploratory Data Analysis (EDA), Data Visualization, Hypothesis Testing, Spatial Data Analysis, Geoprocessing
**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 – 07/2025
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.
- Coauthored a peer-reviewed paper accepted to the 21st AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE-25).

**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 learning environment and database.

## LEADERSHIP ROLES

- **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