

# BESS HAGAN

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## EDUCATION

- Bachelor of Arts in Computer Science, Minor in Data Analytics** 12/2025  
Southwestern University, Georgetown, TX GPA: 4.0, Summa Cum Laude, Dean's List, Finch Merit Scholar
- Poster Presentation, 2025 Research and Creative Works Symposium
  - Selected Coursework: Capstone in Software Engineering, Database Management, Computer Organization, Computer Systems, Programming Languages, Algorithms, Discrete Mathematics, Machine Learning
- 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++, Common Lisp, Haskell, Prolog, Mercury, SQL, NoSQL, R, JavaScript, PHP, HTML, 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.
  - Diagnosed and reported logging errors between the learning environment and database to the developer team.

## 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