# Keaton S. Morales

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Personal Website
LinkedIn Profile

Top Secret / SCI (Active)

## Qualifications Summary

Highly motivated Computer Science and GIS student with proven success in high-pressure military intelligence environments and a strong foundation in software development principles. Highly proficient in C++, with working knowledge of C, Python, JavaScript, HTML, and CSS. With the ability to quickly learn and adapt to new programming languages and tools as required. Experienced in the full software development lifecycle, including concept design, implementation, testing, and documentation. Skilled in using GIT, Linux CLI, Qt Creator, ArcGIS Pro, and ArcGIS Online to support efficient and reliable project execution.

## Areas of Expertise

- Software Development Lifecycle (SDLC)
- Computer Architecture & Operating Systems
- C++ Development
- Software Testing & Debugging
- Code Optimization & Refactoring
- Git & Version Control Systems
- Agile & Collaborative Development
- Data Structures & Algorithms
- Problem-Solving & Troubleshooting

## Education

Bachelor of Science in Computer Science & Geographic Information Systems, University of North Texas, Denton, TX, December 2026

Advanced Geospatial Intelligence Training, U.S. Army, Fort Huachuca, AZ, January 2020

## Key Projects

**Dallas Crime Analysis Dashboard (Python + ArcGIS Online)**

- Engineered an end-to-end Python ETL pipeline to ingest and process over 130,000 police incident records (2020) from the Dallas Open Data Portal. Parsed raw data, implemented custom coordinate transformation from projected X/Y (State Plane) to WGS84 lat/long using pure math in Python, and automated .docx generation for summarizing/importing incident details.
- Published an interactive ArcGIS Dashboard featuring synchronized widgets, high risk zip codes, map extent filtering, and dynamic stats (totals, top offenses, monthly trends, demographics).
- Demonstrated Python automation, coordinate projection, geospatial programming, cloud publishing, and reactive visualization for public safety data analysis.

**Flight Route Graph (C++)**

- Developed a console based application modeling directed flight routes between cities using an adjacency list graph implementation.
- Parsed flight data from a text file to construct the graph, supporting dynamic loading of cities and directed edges.
- Implemented Breadth-First Search (BFS) to find shortest paths by number of connections between any origin and destination.
- Added custom route search functionality allowing users to specify mandatory intermediate layover cities while still minimizing total connections.
- Demonstrated proficiency in C++ STL, file I/O, graph algorithms, and clean modular design.

**Stack-Based Algorithms Library (C++)**

- Designed a reusable, template-based stack data structure supporting multiple algorithmic applications.
- Implemented the Shunting Yard Algorithm for infix-to-postfix conversion and a postfix evaluator to compute expressions.

- Built a balanced-brackets validator to verify expression syntax accuracy.
- Automated input testing and validation to ensure reliability and consistent output.

**Self-Balancing AVL Tree (C++)**

- Developed an efficient self-balancing binary search tree ensuring O(log n) search, insertion, and deletion performance.
- Implemented stack-based iterative rebalancing with dynamic rotations (LL, RR, LR, RL) for optimal balance recovery.
- Enhanced overall system stability and query performance through modular code architecture.

**Soldier Management System (C++)**

- Developed a hierarchical personnel management system simulating military organizational structures.
- Applied OOP principles using STL containers (vector, map) for efficient data storage and retrieval.
- Implemented validation and error-handling modules to ensure accuracy and program stability.

# Professional Experience

**U.S. Army Reserve** **2019 — Present**
**Geospatial Analyst (Reservist)**, *2022 — Present*

Analyze imagery to support operational planning and enhance situational awareness using GIS and FMV tools. Create and brief actionable intelligence to inform decision-makers and refine military strategies. Develop and distribute geospatial data products to aid missions in defense roles.

- Created and disseminated actionable intelligence, improving situational awareness in complex operations.
- Mentored junior analysts and trained them on advanced geospatial tools, enhancing their skills and competencies.

**U.S. Army**
**Geospatial Analyst / Aerial Sensor Operator / Mission Supervisor / Flight Instructor**, *2019 — 2022*

Executed over 120 aerial reconnaissance missions, collecting critical intelligence to support operational objectives. Gathered and analyzed FMV, IR, SAR, and MTI data, providing actionable intelligence to enhance mission planning and situational awareness. Conducted training and operational supervision, ensuring mission readiness in a continuous 24/7 setting. Utilized advanced sensors and software such as Socet GXP, ArcGIS Pro, and ORION to deliver rapid and accurate assessments.

- Achieved flight instructor status, facilitating the training and advancement of over 20 soldiers to enhance unit capabilities.
- Spearheaded 100+ ISR missions, contributing significantly to intelligence gathering efforts and mission success.

# Certification

AT&T Technology Academy 2025 • Code Generation and Optimization Using IBM Granite • Learn JavaScript • Learn HTML • Learn CSS

# Relevant Coursework

Discovering Computer Science • Foundations of Computing • Computer Programming I & II • Data Structures and Algorithms • Software Engineering (Spring 2026) • Algorithms (Spring 2026) • Software Development for Artificial Intelligence (Spring 2026) • Intro to GIS • Advanced GIS • Intro to GIS Programming • Advanced GIS Programming • Enterprise GIS • Remote Sensing