

# Samuel Oliveira

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## Education

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**University of Central Florida** - BS in Computer Science July 2026

- **GPA:** 3.89/4.0
- **Coursework:** Algorithmic & Mathematical Problem Solving, Bio-informatics, Artificial Intelligence, Optimization

## Experience

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**Varsity Programming Team** - UCF Sept 2025 – Sept 2026

- Competed in ICPC competitions nationally for the UCF programming team
- Practiced **25-30** hrs/week in advanced algorithm design and problem solving in C++
- Collaborated in **10+** hours of structured team practices focused on optimization strategies, and strengthening team communication, collaboration, and competition performance
- Participated in weekly lectures on advanced methods and algorithms for optimization, creative problem solving
- Placed top **5%** at ICPC North American Qualifiers 2024
- Created data for the problems at UCF's annual High School Programming Contest

**Undergraduate Teaching Assistant** - UCF Jan 2025 – Present

- Guided **700+** students in foundational programming and concepts in C/C++
- Assisted faculty in developing personalized grading technology and providing those grades to students

## Projects

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**Cow-Basic** - ( C++ , React, Matrix Exponentiation ) samueloliveira.xyz/cowBasic

- The Cow-BASIC compiler is a high-performance C++ interpreter that uses matrix exponentiation to efficiently simulate variable updates in multiple nested loops
- Improved time complexity from  $O(nm)$  to  $O(\log n * \log m)$  for arbitrary sized loops

**Piece It Together** - ( C++ , React, 2-SAT ) samueloliveira.xyz/pieces

- Implemented an interactive grid tool for placing tiles with a 2-SAT validator that checks whether the same configuration is constructible using only L-shaped trominoes
- Grids of size 500x500 can be validated in less than 1s

**Personal Portfolio** - ( React ) samueloliveira.xyz

- Created a competitive programming gallery with interactive visualizations of complex algorithms
- Showcases advanced problem-solving projects such as *Cow-BASIC* and *Piece It Together* using C++ and React

## Academic Projects

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**Artificial Intelligence:** Digit classifier with Neural Networks, Face Recognition with PCA & CRC, regression models

**Bio-Informatics:** Distance-Based Phylogeny Problem, Pattern Finding with KMP, Finding Motifs with Gibbs Sampler, Genome reconstruction using De Bruin graphs, Local+Global Alignment Problems

**Social Network Analysis:** Analysis of the American Food Ingredient Network using Web Scrapers and Gephi

## Skills & Technologies

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**Languages:** C++, C, Java, Python, React, HTML, SQL, JavaScript, LaTeX, HTML/CSS, XML

**Tools & Infrastructure:** Git/GitHub, Bash, Linux, VS Code, GDB/Valgrind, Jupyter Notebook, scikit-learn, Excel

**Proficiencies:** Graph Theory, Computational Geometry, Network Flow, String Algorithms, DP/other Optimizations