

# AUSTIN HALE

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## EDUCATION

### UNIVERSITY OF NORTH CAROLINA – CHAPEL HILL

Computer Science, B.S.

GPA: 3.79

Expected May 2021

Computer Science, M.S.

Expected May 2022

## TECHNICAL SKILLS

### LANGUAGES

ASM • Blueprint • C • C++ • C# •  
CSS • HTML • Java • JavaScript •  
JSL • Perl • Python • Rust •  
SystemVerilog • TypeScript

### COMPUTER GRAPHICS

Azure Kinect • Blender • HoloLens 2  
• Intel RealSense • Leap Motion •  
Oculus Quest • OpenCV • OpenXR •  
Three.js • Unity Engine • Unreal  
Engine

### DEVELOPMENT TOOLS

Adobe • Bash • Clang-Tidy •  
Doxygen • Git • JIRA • Node.js •  
Perforce • VMware • WSL2

### OPERATING SYSTEMS

Windows • macOS • UNIX • Linux

## COURSES

Computer Organization  
Data Structures  
Discrete Structures  
Algorithms & Analysis  
Effective Peer Teaching in  
Computer Science  
Foundations of Programming  
Models of Languages &  
Computation  
Little Languages  
Modern Web Programming (Study  
Abroad in Copenhagen)  
Introduction to Machine Learning  
Intro to VR, Game Development  
and Human-Computer Interaction  
2D Computer Graphics  
Digital Logic and Computer Design  
Files and Databases  
Game Design  
Software Engineering Lab\*  
Programming Language Concepts\*

\*Spring 2021 courses

## LINKS

Personal: austinbhale.com  
Github:// austinbhale  
LinkedIn:// austinbhale

## EXPERIENCE

### UNC – Chapel Hill | Undergraduate Research Assistant | January 2019 - Present

#### Graphics and Virtual Reality Group

- Collaborate with surgeons from the UNC School of Medicine on the development of an AR educational tool using Microsoft's HoloLens 2 in Unreal Engine.
- Prepare two user studies that evaluate the effectiveness of the teacher continuing to coach the student during student practice for learning knot tying and sign language.

#### Enabling Technologies

- Created two web applications (Tar Heel Music and Tar Heel Hero) designed to help people with disabilities participate in education, literacy, and gameplay.

### SAS | JMP Technical Intern (Year-Round) | June 2019 – Present

- Write and debug Python, Perl, JSL, and C++ source code for JMP Research & Development that support the Crash Report and Documentation teams.
- Resolve defects for scripts that generate screenshot comparisons, tokenize and parse C++ source files, and triage new crashes in JMP software.

### UNC – Chapel Hill | Undergraduate Teaching Assistant | August 2018 - Present

#### Models of Languages and Computation

- Apply formal language concepts to students through online communication and feedback.

#### Effective Peer Teaching in Computer Science

- Strengthened current and future learning assistants' understanding of topics in computer science pedagogy by creating twenty scenario-based videos.

#### Foundations of Programming

- Reinforced the concepts taught in the Foundations of Programming course to over 450 students through office hours, online questioning boards, and recitations.

### Ribbon Communications | C2o Engineering Intern | June 2018 – December 2018

- Improved the design and documentation of call server products and solutions.
- Debugged multiple C++ source files for programming errors using Clang-Tidy.

## PROJECTS

### Surgical Knot & ASL Augmented Reality Educational Tool

- Crafted an educational HoloLens 2 application with an emphasis on following the teacher tie a reconstructed surgical knot through hand tracking and 3D point clouds.
- Submitted a video demo showcasing the student-teacher process to SAGES 2021.

### Analyzing Immersion in a One-vs-One Virtual Reality Game

- Implemented Remote Procedure Calls and a Steam Multiplayer system in Unreal Engine.
- Conducted a small study on immersiveness by using a steer-to-center redirection algorithm.

### 2D Graphics Engine

- Created an efficient 2D graphics engine from scratch in C++.
- Extended the engine with textures, matrix transformations, clipping, and gradients.

### Game Development in Unreal & Unity Engines

- Spearheaded the Blueprint/C++ development, UI design, and story writing on two teams of 5-10 people for game jam submissions.
- Completed an audio-reactive story-based experience with 3D mathematical algorithms, featuring a noise flow field, circle tangents, and beat detection.

### Tar Heel Hero

- Developed a 3-D rhythm-based computer game rendered in Three.js.
- Introduced audio-assisted and touch-enabled features for the visually impaired.

### Tar Heel Music

- Expanded on external machine learning and note sequencing libraries (e.g., Magenta.js) to create an accessible music experience for blind users.

### Clang-Tidy Visualizer

- Generated a structured view of various bugs in C/C++ source code.

## ACTIVITIES & LEADERSHIP

### Enabling Technology Club | President | August 2017 – Present

- Contribute to the collection of over 10 million books read on Tar Heel Reader.
- Lead 40 members to create accessible games with Tar Heel Gameplay and static websites.

### Buckley Public Service Scholars | Enrolled Member | August 2017 – Present

- Demonstrate a strong commitment to public service. Invested 300 hours of service and four skills trainings involving effective communication practices and service abroad.

### Hobbies & Other Interests

- Hackathons (HackDuke, HackNC), game jams, 3D animation, audio visualizations.