

AUSTIN HALE

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EDUCATION

UNIVERSITY OF NORTH CAROLINA – CHAPEL HILL

Computer Science, B.S.

GPA: 3.79
Graduated with Distinction
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 • StereoKit
• Three.js • Unity Engine • Unreal
Engine • UWP

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
Introduction to Human-Robot
Interaction*

*Class in progress

LINKS

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

EXPERIENCE

Nakamir | Mixed Reality Software Engineer | May 2021 – Present

- Develop a recording application based on the HoloLens 2's input system (hand, gaze, head).
- Create an XR labeling application that trains an ONNX model to identify real-world objects.

UNC – Chapel Hill | 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.

Enabling Technologies

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

UNC – Chapel Hill | Undergraduate Teaching Assistant | August 2018 – May 2021

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.

SAS | JMP Technical Intern (Year-Round) | June 2019 – April 2021

- 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.

Ribbon Communications | C20 Engineering Intern | June 2018 – December 2018

- Debugged hundreds of 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.
- Implemented point cloud video sequences and marker tracking (ArUco & QR Code) with multiple RealSense D435 depth cameras through RealSense and OpenCV software.

2D Graphics Engine

- Fostered 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 experience with 3D mathematical algorithms.
- Implemented a complete multiplayer system and then conducted a small study on immersiveness through a steer-to-center redirection algorithm.

Tar Heel Hero

- Developed a blind-accessible 3-D rhythm-based computer game rendered in Three.js.

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 webpage view of various bugs in C/C++ source code with over 12.5k downloads on the Python Package Index (PyPI).

ACTIVITIES & LEADERSHIP

Enabling Technology Club | President | August 2017 – May 2021

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

Buckley Public Service Scholars | August 2017 – May 2021

- Demonstrated 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.

POSTER & PODIUM PRESENTATIONS

SAGES 2021 Annual Meeting | Las Vegas, NV | August-September 2021

Podium Presentation: "An augmented reality model to guide surgical skills acquisition"
Sanchez-Casalongue, M; **Hale, A**; Rewkowski, N; Fuchs, H; Farrell, T