Niall L. Williams

niallw@cs.umd.edu ◇ niallw.github.io ◇ 347-335-4330

EDUCATION

University of Maryland, College Park, MD, USA — Aug 2019 - Present
Ph.D. in Computer Science
– Research interests: Virtual/Augmented reality, perception, motion planning, human-computer interaction
– Advisors: Dr. Dinesh Manocha & Dr. Aniket Bera

Davidson College, NC, USA — Aug 2015 - May 2019
B.S. with High Honors in Computer Science

RESEARCH EXPERIENCE

Locomotion for Virtual Reality (gamma.umd.edu) — Jan 2020 - Present

- Developing steering algorithms to minimize the chance of collision with physical obstacles. Focus is on formalized, computational methods to enable collaborative virtual experiences between multiple users.
- **Skills/techniques:** Motion planning, computational geometry, simulation, visual perception, psychophysics.

Gaits for Virtual Avatars (gamma.umd.edu) — Aug 2019 - Jan 2020

- Worked on synthesizing and retargeting emotional gaits for realistic virtual avatars. Main contribution was in evaluating the results and investigating motion retargetting methods.
- **Skills/Techniques:** Motion retargetting, human gait simulation.

Haptics for Teaching Physical Concepts (perceptproject.weebly.com) — July 2019 - Aug 2019

- Developed a buoyancy simulation to render properties of buoyancy with haptic force-feedback. Goal is to use simulations to improve teachers' understanding of physics concepts to improve their teaching efficacy.
- **Skills/techniques:** Physically-based simulation, haptic rendering.

PUBLICATIONS & INVITED TALKS

Publications

[1] **NL Williams**, A Bera, D Manocha. Redirected Walking in Static and Dynamic Scenes Using Visibility Polygons. *IEEE Transactions on Visualization and Computer Graphics*, 2021 (Proc. ISMAR 2021)

[2] **NL Williams**, A Bera, D Manocha. ARC: Alignment-based Redirection Controller for Redirected Walking in Complex Environments. *IEEE Transactions on Visualization and Computer Graphics*, 2021 (Proc. IEEE VR 2021) [Best paper honorable mention]

[3] U Bhattacharya, N Rewkowski, P Guhan, **NL Williams**, T Mittal, A Bera, D Manocha. Generating Emotive Gaits for Virtual Agents Using Affect-Based Autoregression. *IEEE ISMAR*, 2020

[4] **NL Williams** and TC Peck. Estimation of Rotation Gain Thresholds Considering FOV, Gender, and Distractors. *IEEE Transactions on Visualization and Computer Graphics*, 2019 (Proc. ISMAR 2019)

Invited Talks

[1] ARC: Alignment-based Redirection Controller for Redirected Walking in Complex Environments, *SIGGRAPH 2021 TVCG Session on VR*, SIGGRAPH 2021.

AWARDS & HONORS

Best Paper Honorable Mention (IEEE VR 2021)	2021
Dean's Fellowship, University of Maryland, College Park	2019, 2020
Senior Computer Science Award, Davidson College	May 2019
Nominated for CRA Outstanding Undergraduate Researcher Award	Oct 2018

TECHNICAL SKILLS

Programming Languages	C/C++, C#, Python, R
Software Packages and Tools	Unity3D, SteamVR, OpenGL, D3.js, git
Operating Systems	Windows, Linux (Ubuntu)