M Charity
AI and Game Design PhD Candidate
mlc761@nyu.edu - (804) 551-7166

Education

New York University - Tandon School of Engineering Brooklyn, NY
PhD, Game Design and Artificial Intelligence, GPA 3.63/4.00 expected 2024

Virginia Commonwealth University Richmond, VA
BS, Computer Science with minor in Mathematics, GPA 3.81/4.00 May 2019
- 2019 College of Engineering Outstanding Student Award
- 2018 Wright Access Scholarship Recipient
- 2017 and 2018 EDU Tech Scholarship Recipient
- 2016 Provost Scholarship Recipient

Deep Run High School - Center for Information Technology Glen Allen, VA
High School Diploma, GPA 4.94/4.00 June 2016
- 2015 NCWIT National Aspiring Award Winner
- 2014 NCWIT Regional Aspiring Award Winner

Research Experience

New York University - Tandon School of Engineering Brooklyn, NY
PhD Researcher September 2019 - present
- Studying game design and artificial intelligence under Dr. Julian Togelius
- Designed, implemented, and deployed crowd-sourced mixed-initiative level designer
- Helped develop Sims simulator framework for generating and populating novel houses
- Developed quality-diversity system for creating levels with specific mechanic features
- Helped develop game agents implementing GPT-2 transformer to play the word game Codenames

Virginia Commonwealth University Richmond, VA
Unity Programmer MCV moVR - Virtual Reality Physical Therapy Lab Jan 2019 - Aug 2019
- Built 5-game virtual reality game suite for fibromyalgia patients (Build-A-Bot)
- Prototyped HTC Vive full-body motion capture system for animation
- Built pain rating system for viewing work-effort of physical activities
- Built card matching VR game for fibromyalgia patients
- Prototyped pain categorization and selection VR system

Natural Language Processing Undergraduate Researcher Jun 2016 - Jan 2019
- Developed named-entity recognition system for drug occurrences
- Integrated interface for SemMed Database
- Helped develop literature based discovery neural network
- Developed latent semantic analysis system for doctor-patient interaction

University of Minnesota - Twin Cities Minneapolis, MN
NSF Big Data REU Researcher Jun 2018 - Aug 2018
- Worked in Dr. Victoria Interrante's virtual reality lab
- Designed and implemented a novel locomotion VR system
- Ran a user-based experiment with 10 participants for the performance of the system

Leadership/Teamwork Experience

EXAG 2021
Co-organizer for EXAG 2021 Virtual
- Helped organize and host the 2021 Experimental AI in Games Workshop at AIIDE 2021 Mar 2021 - Oct 2021
- Maintained and updated the EXAG.org website
- Put together the Call for Papers, arranged presentation schedule, and recruited reviewers

Virginia Commonwealth University   Richmond, VA
Computer Science Student Advisory Board member   May 2018 - May 2019
- Communicated with both students and professors about state of the department
- Volunteer as ambassador at College of Engineering open houses
- Promote student-led social clubs and extracurricular activities

FRC Team 1086 - Blue Cheese   Glen Allen, VA
Lead Programmer   May 2013 - Jul 2015
- Programmed team's competition robot in C++ for FRC season

FTC Captain   Jul 2015 - Feb 2016
- Captain of the FTC division of Blue Cheese - Team 93 Blue Cheese Jr.

Deep Run High School   Glen Allen, VA
Leader of Computer Club Game Design Division   Oct 2012 - May 2015
- Founder and leader of the game design division
- Organized and managed game development within sub-teams

CyberPatriot   Oct 2012 - May 2015
- JV Captain (freshman and sophomore year)
- Veteran member of all-girls team (junior year)

Technical Work Experience
New York University
Teaching Assistant   Brooklyn, NY
- Teaching assistant for CS-GY (Artificial Intelligence, AI for Games, and Game Design)   Aug 2020 - Present
- Graded projects and tutored during office hours

Virginia Commonwealth University   Richmond, VA
Teaching Assistant - CMSC 257   Aug 2018 - May 2019
- Teaching assistant grading projects, aiding with lab assignments, and tutoring during office hours

CodeVA   Richmond, VA
Teaching Assistant - Game Design Summer Camp   Aug 2015 - Sep 2015
- Assisted with teaching Scratch and game development to elementary school children

University of Richmond   Richmond, VA
Web Services Intern   Jun 2015 - Aug 2015
- Intern to the back-end web services team monitoring statistics for web traffic

Technical Skills
Programming Languages
- Javascript, Python, C#, C++, C, Java, Perl, PHP, MySQL

Software and operating systems
- HTML5, PICO-8, Unity, Google Sheets, git, jupyter-notebook, unix, MACOS, Windows

Publications
- **M Charity,** Michael Cerny Green, Ahmed Khalifa, and Julian Togelius. 2020. Mech-Elites: Illuminating the Mechanic Space of GVG-AI. In International Conference on the Foundations of Digital Games (FDG '20). Association for Computing Machinery, New York, NY, USA, Article 8, 1–10. DOI:https://doi.org/10.1145/3402942.3402954
- **Charity, M.,** Khalifa, A., & Togelius, J. (2020). Baba is Y'all: Collaborative Mixed-Initiative Level Design. 2020 IEEE Conference on Games (CoG), 542-549.
- **Charity, M**., D. Rajesh, R. Ombok, and L. B. Soros. "Say 'Sul Sul!' to SimSim, A Sims-Inspired Platform for Sandbox Game AI". *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, vol. 16, no. 1, Oct. 2020, pp. 182-8, https://ojs.aaai.org/index.php/AIIDE/article/view/7428.

- Jaramillo, C., **M. Charity**, R. Canaan, and J. Togelius. "Word Autobots: Using Transformers for Word Association in the Game Codenames". *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, vol. 16, no. 1, Oct. 2020, pp. 231-7, https://ojs.aaai.org/index.php/AIIDE/article/view/7435.