

Adnan Karim – Computer Science

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EDUCATION

University of Calgary – Calgary, AB
BSc. in Computer Science (CGPA: 3.6/4.0)

Graduated: (Sept 2017 - Apr 2021)

RESEARCH & WORK EXPERIENCE (ORDERED BY RELEVANCY)

Incoming Summer Researcher
iLab and Evolutionary and Swarm Design Lab, University of Calgary

Calgary, AB (May 2021 – Aug 2021)

- Supervisors: Dr. Ryo Suzuki and Dr. Christian Jacob.
- Projects to be determined.

Mixed Reality Developer Intern
Insight Canada, University of Calgary

Calgary, AB (May 2021 – Aug 2021)

- Will be creating industry related Mixed Reality applications based on client needs.

Undergraduate Visiting Researcher
Interaction Design Group, Stanford University (*Suspended due to COVID-19*)

Stanford, CA (June 2020 – Aug 2020)

- Supervisors: Dr. Larry Leifer and Dr. David Sirkin

Undergraduate Visiting Researcher
Interaction Lab, University of Southern California

Los Angeles, CA (June 2019 – Aug 2019)

- Supervisors: Dr. Maja Matarić and Tom Groechel (Senior PhD Student).
- Created a solution with C#, Unity and ROS to have Kuri robot follow desired path set in the virtual world through the HoloLens by user.
- Created a native C++ ROS node publisher which created vibrant color patterns on the Kuri Robot.
- Assisted and mentored high school students in the lab with ROS and HoloLens problems.
- Tasks mainly completed using: Unity3D, Mixed Reality Toolkit for Unity (MRTK-Unity), C#, and ROS#.

Undergraduate Visiting Researcher
Collaborative Advanced Robotics & Intelligent Systems Laboratory, University of British Columbia

Vancouver, BC (May 2018 – Aug 2018)

- Supervisors: Dr Machiel Van der Loos and Dr Wesley Chan.
- Created a virtual barrier system that protects the user wearing a Microsoft HoloLens and objects of interest in the Robot's work environment.
- Created a solution to handle augmented reality drifting using augmented reality tags.
- Created a solution to correctly have the Barret Robot Arm come to the user wearing the Microsoft HoloLens.
- Projects were in collaboration with the German Space Agency (DLR).
- Tasks mainly completed using: Unity3D, Mixed Reality Toolkit for Unity (MRTK-Unity), C#, and ROS#.

Software Engineer Intern
Lockheed Martin

Calgary, AB (Sept 2018 – May 2019)

- Participated in developing vehicle control software for unmanned air vehicles.
- Programmed in C++ using Qt under the guidance of TDD/ATDD.
- UI Design (QtWidgets, QML).
- Participated in Agile Processes such as story estimation, agile sprints and retrospectives.
- Mentored newly hired intern with C++ topics, company's software architecture, testing framework and agile methodologies.
- Tasks mainly completed using: C++, QT, QtWidgets and QML.

Software Developer Intern
The City of Calgary

Calgary, AB (May 2017 – Aug 2017)

- Implemented a search engine using Apache Solr to search The City of Calgary's knowledge base and display the results.
- Tasks mainly completed using: Apache Solr, JavaScript, HTML and CSS.

Undergraduate Researcher
University of Calgary

Calgary, AB (May 2016 – Aug 2016)

- Supervisor: Dr Sean Stotyn.
- Investigated black hole properties that impacted its entropy and applied mathematical techniques to gain an understanding of the properties.

PUBLICATION

[1] Wesley P. Chan, *Adnan Karim*, Camilo Perez Quintero, H.F. Machiel Van der Loos, and Elizabeth Croft. **Virtual Barriers in Augmented Reality for Safe Human-Robot Collaboration in Manufacturing**. ICRA Workshop: **Robotic Co-workers 4.0: Human Safety and Comfort in Human-Robot Interactive Social Environments**, 2018
https://drive.google.com/file/d/18FIQyL_xDP2Un2AAbAMaH2BTa8mpIzRz/view?usp=sharing

PROJECTS

COVID-19 through Mixed Reality (Group - 2020)

- Visualized the transmission of COVID-19 when someone makes contact with plastic, wood and metal using Unity3D, MRTK-Unity, and C#.

HandJam, an iPhone Game to Promote Sign Language Education for Everyone (Group - 2020)

- Created the application's main game logic when user's attempt a American Sign Language alphabet using Swift.

Hospital Management System, Managing Patients, Nurses and Doctors (Group - 2020)

- Created all backend functionality for the website such as user authentication, database management and scheduling appointments using React.

Analyzing U.S. Mass Shootings (Solo - 2019)

- Created multiple data visualizations to investigate mass shootings and if certain relationships existed between the shooters and other properties using D3.js.

SaVegan, Mindful Grocery Shopping (Group - 2018)

- Created an automated system to generate personalized and optimized grocery lists for the user using MySQL and PHP.

SKILLS

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- **Languages:** C#, C++, Python, JavaScript, MySQL, Swift
 - **Libraries and Toolkits:** Unity3D, MRTK-Unity, scikit-learn, React, ROS, D3.js
 - **Version Control:** Git
 - **Game Engines:** Unity, Unreal Engine 4

RESEARCH GRANTS & SCHOLARSHIPS

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- Student Undergraduate Research Experience Grant (University of Southern California – June 2019)
 - Undergraduate Student Research Award Grant (Natural Sciences and Engineering Research Council of Canada – May 2018)
 - Entrance Scholarship (University of Calgary – September 2015)
 - (2x) Jason Lang Scholarship (University of Calgary - September 2016, 2020)

EXTRACURRICULAR

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- 60m sprinter on the University of Calgary Track and Field Team (September 2018 – February 2019)
 - Production Assistant for Local Calgary Film *Purple Kisses* (February 2020)