Adnan Karim – Computer Science

#100 Somercrest Grove S.W. Calgary, AB, T2Y 3M3
adnan.karim@ucalgary.ca | https://adnankarim2121.github.io/ | (403) 890-8454

EDUCATION

University of Calgary – Calgary, AB **Sept 2021 – Current**
MSc. in Computer Science

- **Supervisor: Ryo Suzuki**
- **Lab: Interactions Lab (iLab)**

University of Calgary – Calgary, AB **Sept 2017 - Apr 2021**
BSc. in Computer Science with Distinction (CGPA: 3.6/4.0)

RESEARCH & WORK EXPERIENCE (ORDERED BY RELEVANCY)

Sessional Instructor **Calgary, AB (Jan 2022 – April 2022)**
University of Calgary

- Will be teaching 250 students for the course CPSC 217, Introductory to Computer Science for Multidisciplinary Studies I.
- Will be creating assignments, lectures and exams for the students.
- Will manage 10 Teaching Assistants for the course.

Teaching Assistant **Calgary, AB (Sept 2021 – Dec 2021)**
University of Calgary

- Teaching two tutorial sections for CPSC 231, Introductory to Computer Science for Computer Science Majors I.
- Nominated by the students for a Student Teaching Excellence Award for the Fall 2021 semester.
- Asking for bi-weekly feedback through a self-created survey to get student feedback to improve teaching and general comments.
- Creating unique weekly tutorial notes that, based on bi-weekly feedback, has been extremely helpful for assignments, exercises, and tests.
- Held virtual continuous tutorials for all students the week before their assignments is due to assist them. Based on bi-weekly feedback, students found it extremely useful and helpful.

Summer Researcher **Calgary, AB (May 2021 – Aug 2021)**
iLab University of Calgary

- Supervisor: Dr. Ryo Suzuki.
- Paper submitted to CHI 2022. Conditional Acceptance.

Undergraduate Visiting Researcher **Stanford, CA (June 2020 – Aug 2020)**
Interaction Design Group, Stanford University *(Suspended due to COVID-19)*

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

Undergraduate Visiting Researcher **Los Angeles, CA (June 2019 – Aug 2019)**
Interaction Lab, University of Southern California

- 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 **Vancouver, BC (May 2018 – Aug 2018)**
Collaborative Advanced Robotics & Intelligent Systems Laboratory, University of British Columbia

- 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 **Calgary, AB (Sept 2018 – May 2019)**
Lockheed Martin
- 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 **Calgary, AB (May 2017 – Aug 2017)**
The City of Calgary
- 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 **Calgary, AB (May 2016 – Aug 2016)**
University of Calgary
- Supervisor: Dr Sean Stotyn.
- Investigated black hole properties that impacted its entropy and applied mathematical techniques to gain an understanding of the properties.

PUBLICATIONS

[1] Suzuki R, ***Karim A***, Xia T, Marquardt N, Hedayati H Augmented Reality and Robotics: A Survey and Taxonomy for AR-enhanced Human-Robot Interaction and Robotic Interfaces. **ACM CHI 2022** (Conditional Acceptance)

[2] Wesley P. Chan, ***Adnan Karim,*** Camilo Perez Quintero, H.F. Machiel Van der Loos, and Elizabeth Croft. 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)

RESEARCH GRANTS & SCHOLARSHIPS

- Snap Creative Challenge Award Recipient with team members Ryo Suzuki, Neil Chulpongsatorn, and Shivesh Jadon. (Snap - 2021)
- 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)

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

- **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