Hayyan Liaqat

Curriculum Vitae

hliaqat [at] sfu.ca

Education

Sep 2021 - 2023 **MSc**, Simon Fraser University
- Master of Science

Sep 2017 - Dec 2020 **BSc**, Simon Fraser University
- Computer Science with a specialization in Software Systems

Skills

- Proficient in C, C++, Python, Java
- Proficient in Python data science libraries such as NumPy, Pandas, TensorFlow, Keras, SKLearn
- Proficient in relational database, data structure, networking, and operating system concepts
- Proficient in web development with HTML, CSS, JavaScript, PHP, ASP.NET
- Experienced with machine learning, computer vision, and natural language processing concepts
- Experienced with Racket, Haskell, Go, Android application development, Azure
- Strong understanding of statistical concepts
- Strong in analyzing problems and developing suitable and efficient algorithms
- Proficient in Adobe Photoshop, After Effects, Illustrator
- Experienced in working with groups and using version control systems such as Git
- Competent in Windows, Linux and MacOS environments

Publications

- Mohamed Abdalla, Daniela Rosu, **Hayyan Liaqat**, Moustafa Abdalla, Graeme Hirst, Benjamin Fine, Frank Rudzicz, *"Using simulations to aid in the design and evaluation of clinical machine learning"*, JAMIA (In preparation),
- Chloe A. Lim, **Hayyan Liaqat**, Will Siu, Ghassan Hamarneh, George Medvedev, *"Future implementation of automated analysis tools for Multiple Sclerosis on conventional magnetic resonance imaging"*, MSVirtual2020 Joint ACTRIMS-ECTRIMS meeting, https://www.researchgate.net/publication/346615584, August 2020

Research

Feb 2021 - Present Deep Learning for Skin Lesion ABCD Prediction — Research Assistant
- Working with Dr. Ghassan Hamarneh at the Medical Image Analysis Lab at SFU
- Building a model to predict the Asymmetry, Border (irregularity), Color (variegation), and Diameter of skin lesions
- ABCD criteria can be used to determine the malignancy of a skin lesion
- Utilizing deep learning to predict features directly from image, bypassing the need for segmentation

May 2020 - Present | Segmentation of Lesions and Brain Volume | Research Assistant

- Working with Dr. Ghassan Hamarneh at SFU and Dr. George Medvedev (MD) at Royal Columbian Hospital
- Building a Multiple Sclerosis tool for automatically detecting lesions and brain volume from MRI scans
- Targeted specifically for clinical use and in-hospital deployment
- Poster presented in the MSVirtual2020 Joint ACTRIMS-ECTRIMS meeting

Dec 2019 - Nov 2020 | visualizER | Research Assistant

- Developed an emergency room simulator in collaboration with a PhD student working under Dr. Frank Rudzicz at the University of Toronto
- Applied the simulator to identify bottlenecks in the emergency room and to test the efficiency of hypothetical hospital workflows
- Manuscript to be submitted to JAMIA

Jan 2020 - March 2020 | Language Learning in Immigrant Families | Research Assistant

- Worked with Dr. Cosmin Munteanu from the University of Toronto
- Project looked at developing a tool for supporting language learning in immigrant families
- Worked with the lead PhD student to conduct interviews and design activities in families' homes to gather design requirements

Nov 2018 - May 2019 | MRI Scan Exporting for Tumor Detection | Research Assistant

- Worked with Dr. Ghassan Hamarneh in the Medical Image Analysis Lab at SFU
- Extracted patient MRI scans from a hospitals database
- Anonymized and maintained confidentiality of each patient
- MRI scans to be used in developing algorithms for tumor detection

Projects

July 2020 - Present | Sarcasm Detection | Developer

- Developed a machine learning model to automatically detect sarcasm from videos
- Utilized a multi-modal approach to analyze both video and audio

July 2020 - Present | COVIDFree@Home | Web Developer

- Developed the website for the COVIDFree@Home project lead by Dr. Eyal De Lara
- covidfreeathome.org

Jan 2020 - December 2020 | Bibtex2Html | Developer

- Worked with Dr. Hamarneh at Simon Fraser University
- Built a tool to convert raw bibliography data in the form of a bib file into an html page showing the lab's publications

May - July 2020 | Bookmarker | Developer

- Developed a web application to allow users to create and store bookmarks
- Web application, including SQL database, was hosted on an Azure virtual machine
- Used HTML, CSS, JavaScript, PHP, ASP.NET

Sep - Dec 2019 Cradle Platform — Scrum Master, Developer

- Devleoped a web application and mobile app to record and store hospital patient data
- Worked according to the specifications of a client who wants to deploy the app in underdeveloped areas such as Uganda
- Application needed to be accesible and catered to both inexperienced health care volunteers, as well as professionally trained health care workers
- Worked in a group of 8 members
- CMPT373: Software Development Methods @ Simon Fraser University

May - Aug 2019 Professor Rating Prediction using Machine Learning — Developer

- Used web crawlers to collect professor data from www.ratemyprofessors.com
- Used sentiment analysis to create a machine learning model to predict professor ratings based on comments
- CMPT353: Computational Data Science @ Simon Fraser University

Sep - Dec 2018 Green Food Android App — Scrum Master, Developer

- Built Android application to track the CO2 emissions from user's diets
- Stored user data on Google's Firebase Cloud server and displayed the top emissions in a real-time leaderboard
- Used GitLab for version control
- CMPT276: Software Engineering @ Simon Fraser University

May - Aug 2018 Battle Bottle - Stop Motion Animation — Team Member

- Created a stop motion animation PSA to raise environmental awareness
- Animation done in 12fps, with over 1000 individual frames
- Animation voted best in a class of 175 students
- IAT110: Visual Communication Design @ Simon Fraser University
- Video

Volunteer Work

March 2019 Digital Citizenship Jr. Hackathon — Volunteer Mentor

- Educated a group of children on Internet safety and privacy
- Helped the children develop a game on the topic of online safety

March 2019 SCWIST Website Development Collaboration — Volunteer

- Collaborated with a group of volunteers to design and implement a website for the Society for Canadian Women in Science and Technology
- Designed and created a prototype for the website landing page

Leadership Experience

Sep 2017 - July 2018 Kids Can Code — Founder

- Started an initiative to teach programming to elementary school students
- Taught groups of 10+ students. Sessions went on weekly, for 2 months
- Classes focused on developing web pages using html and css

Work Experience

March 2017 BC Technology for Learning Society

- Refurbished old computers to be donated to local schools
- Installed operating systems on computers
- Installed hardware components of the computers

Academic Achievements and Awards

- Deans Honor Roll at Simon Fraser University
- Granted "Advanced Placement Scholar with Distinction" award by the College Board
- Granted a Major Service award for completing 100+ hours of volunteering in a single school year