Nusair Islam ***Electrical Engineering Student***

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# Highlights of Qualifications

* Application of technical skills in a wide variety of contexts, including employment, design teams, and personal projects.
* In depth understanding of software and hardware principles. Strong mastery of software and hardware languages
* Eagerness to learn and incredibly goal driven personality leads to a strong hunger for innovation and knowledge

# Skills

* FPGA, Arduinos
* Breadboard
* Metalworking
* Woodworking

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| PROGRAMMING  * TCL, C, C++, C#, Python, JavaScript, MATLAB * (MARKUP) HTML/CSS, XML * (HARDWARE) Verilog, SystemVerilog * (ASSEMBLY) ARM, 8051 | SOFTWARe  * SolidWorks, Ansys, PowerArtist, Verdi * MS Office, Visual Studio, GrabCAD, Git, Unity, GameMaker, Godot * Quartus, ModelSIM * MySQl, Amazon WebServices | Hardware | LANGUAGES  * English (fluent) * Bangla (fluent) * Spanish (Intermediate) * Hindi (Intermediate) |

# Education

# UNIVERSITY OF BRITISH COLUMBIA Anticipated April 2023

# *Bachelor’s Degree of Applied Science,*

# *Major in Electrical Engineering*

# *Minor in Physics*

# SIR WINSTON CHURCHILL HIGH SCHOOL SEPT 2015 – SEPT 2018

# *High School Diploma,*

# *International Baccalaureate Program*

# Work Experience

## ANSYS SEPT 2021 - PRESENT

*Electronics Research and Development - 3D GUI at Ansys*

* Ran corner test cases for Ansys EDT software
* Performed expected vs actual test comparisons
* Created 3D and 2D models on CAD and defined excitations for model
* Ran eddy current analysis on 2D and 3D models using defined excitations and calculated resultant torque
* Implemented compatibility with latest MATLAB/Simulink version and desktop software using C++

## Intel corporation jan 2021 – AUG 2021

*ASIC Power Efficiency Engineer – Non-Volatile Solution Group*

* Successfully debugged error involving critical nets by tracing instantiated nets using PowerArtist and tracing activity data using Novas Verdi.
* Found patterns in RTL block timing issues by creating TCL scripts to separate flops into inferred, instantiated, and inferred + instantiated flops. This data will be used for other similar blocks to correct timing issues.
* Utilized PowerArtist to increase Clock Gating efficiency by 5% and increase overall power efficiency.
* Created and trained a TensorFlow dense neural network regression model to calculate data leakage power with over 75% accuracy given cell counts and areas as inputs.
* Created and utilized Apache’s Spark Machine Learning to create and train a linear regression model with over 70% accuracy.
* Increased preprocessing efficiency by creating python scripts that automatically pre-process PMC Assembly code based on a config file. This pre-processed code can then be successfully run by a PMC Compiler.
* Decreased chance of error by creating a python script that programmatically searches RDL files for a specified input hierarchy register and calculates the address of the register.

## UNIVERSITY OF BRITISH COLUMBIA SEPT 2020 – APRIL 2021

*Programming Teaching Assistant*

* Teaching assistant for APSC 160 – Introduction to Computation in Engineering Design
* Created lesson plans for first-year engineering students with no prior programming experience.
* Ran office hours and mentored over 50 students to help them better understand the material.
* Gained and demonstrated an in-depth knowledge about C programming language, stack memory theory, variable memory allocation, heap and stack memory, binary trees, sorting, data structures, and runtime optimization.

## Rocsol technologies inc. MAY 2020 – SEPT 2020

*Junior Software Intern*

* Worked on real-time optimization software in C# that utilizes drilling field data and survey data to calculate the effective downhole weight on bit exerted on the hydrocarbon formation during horizontal drilling.
* Performed data analysis for the testing, verification, and validation (VNV) of this real-time optimization software.
* Resolved errors present in the software saving Rocsol Tech the time and money otherwise required to debug the software.
* Created detailed input-output scripts in Excel to compare the software’s output to the expected calculated output and performed an error estimation.
* Created XML configuration files that were utilized to input data, set units, and create a .txt log file for the software.
* Built a Windows Forms application in C# that utilized user input data to generate a diagram representing the data, allowing users to better understand the output of the program.
* Created a Windows Forms animation in C# that read data from an Excel plot and generated an animation to visualize the data. The animation changed depending on the input data.

## Incline education FEB 2020 – SEPT 2021

*Vice-President of Project Management*

* Started an official non-profit organization aiming to help high school students transition easily into university.
* Created webpages for blog posts using HTML/CSS, PHP, and JavaScript.
* Helped create and update the Incline Education website. Utilized AWS: LightSail to store information and used MySQL to create an organized database.
* Utilized Git to update AWS content.
* Created a mentorship program that pairs high school students with university students in their field of interest.
* Organized an online panel discussion with over 100 high school student attendees to help guide them through the university application process, as well as tips for succeeding in university.

# Technical Experience

## UBC ELECTRICAL ENGINEERING PROGRAM JAN 2020 – FEB 2020

*Created a Reflow Oven Controller*

* Created a circuit on a breadboard that used a thermocouple and operational amplifier to measure the temperature inside the oven relative to a reference point outside the oven.
* Created a finite stare machine in 8051 assembly language that utilized the temperature readings inside the oven to set the oven to different states.
* Allowed user to input the temperature and the oven would automatically climb to the temperature.
* Created a pulse-width modulator to input power into the oven.
* Created a finite state machine that would store speech data into a memory disk, and when the oven reached various temperatures and states, the voice would read out the respective temperatures and states.

## UBC ELECTRICAL ENGINEERING PROGRAM OCT 2019 – NOV 2019

*Created a Simple Reduced Instruction Set Computer (RISC) on Verilog*

* Created a machine on Verilog that can store and load information from RAM and perform arithmetic operations.
* Programmed an arithmetic logic unit to add, subtract, and shift numbers in binary.
* Developed a CPU that took in a list of 32-bit instructions in assembly and sent it to the decoder.
* Created a decoder that decoded the 32-bit instruction into specific steps that would perform instructions.
* Created testbenches on Verilog and ran the tests on ModelSim to ensure the modules were correct.

## UBC orbit SEPT 2018 – APRIL 2020

*Structure Sub-Team*

* Engineering design team with a goal of creating a satellite that will take pictures of specific places on Earth from low-Earth orbit.
* Satellite is set to be launched into low-Earth orbit from Florida in December 2020.
* Created a python script that converted irradiance values from a CSV file into temperature and wrote the data onto a separate CSV file.
* Utilized Dremels, Miter Saws, and Belt Sanders to cut aluminum rods to specific sizes.
* Overhauled the casing design of the satellite on SolidWorks so that compartments can be easily accessed.
* Designed external rails on SolidWorks that will be used in the main assembly to connect different modules.

## VEX Robotics SEPT 2014 – APRIL 2017

*3388E Team Member*

* Robotics competition with a goal of creating a user-controlled and autonomous robot that will participate in a cone stacking game.
* Achieved 1st place in the Calgary Regionals VEX Robotics Competition.
* Utilized hacksaws, bandsaws, drills, and Dremels to create the parts necessary for constructing the robot.
* Programmed the robot, in C, to respond to sensors in an autonomous mode and a wireless controller.

# Personal Projects

## AXEL Ai personal assistant Nov 2020 – PRESENT

* Inspired by Marvel’s Iron Man and his AI assistant Jarvis, I set out to create my own ‘Jarvis’ named Axel.
* Utilized Apache’s Spark to train a model from a personal dataset of commands and associated states so model can effectively take an input command and output a state with over 90% accuracy.
* Utilized TensorFlow to create a computer vision model for facial detection with an over 80% accuracy.
* Using Spotify’s web API, programmed Axel to play specific songs, albums, playlists, or artists and put songs in queue.
* Created a system for Axel to login to Facebook securely, and store cookies locally so that the user does not need to input a 2-Factor authentication code again. User can use axel to send Facebook messages to their close friends from their account.
* Linked Axel to phone number so Axel can send messages and calls.
* Utilized a chatbot learning algorithm and conversion corpus to create a chatbot function.

## Unity game development July 2020 – PRESENT

* Started a game development team to create a video game on Unity.
* Created Unity scripts that control the player, NPCs, enemies, sprites, etc.
* Built scripts that control the battle system of the game, the attacks of the player, and the attacks of the enemies.
* Animated characters using animation controllers for the player, NPCs, and enemies.
* Generated cutscenes using timelines and story game objects.
* Created custom pixel-art sprites and tile sets to create animations and tile maps.
* Worked with a team of writers to create an original game story.
* Worked with a team of song writers to compose original music for the game.

## Project: pocket change SEPT 2016 – SEPT 2020

* Created an organization that aimed to help homeless people in Calgary by receiving donations and distributing food and clothing supplies to homeless people.
* Amassed over $500 in donations and helped 100+ homeless people.
* Opened a branch in North South University, Bangladesh.

# Interests & Activities

# Bodybuilding, video games, song writing, guitar, cooking, Hung Gar Kung Fu, basketball, hiking, theoretical physics