**SHAFINAZ ISLAM**

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Work Authorization: **US Permanent Resident (Green Card)**

**CAREER SUMMARY**

M.Sc. in Electrical and Computer Engineering. Proficient in Python, C++, SQL, R/RStudio, Data Structures and Algorithms, Object-Oriented Programming, Machine Learning, Audio Data Processing, Pandas, NumPy, Scikit-learn, Keras, matplotlib, TensorFlow.

**EDUCATION**

**MSc, Electrical and Computer Engineering** December 2020

Texas State University, San Marcos, Texas

* **GPA:** 3.89 out of 4.00
* **Projects:**

1. Remote tracking of Houston toads

* Mass production of Automatic Recording Devices (ARD) to track Houston Toads using the embedded solution.
* Used Raspberry Pi as a single board computing platform for processing the audio signals that were recorded using the USB microphone.
* Developed script for WittyPi which was used as the time management device for Raspberry Pi

1. Parallel computation of shallow water equation for flood modeling.

* Shallow water equations had been solved to calculate the horizontal and vertical velocities.
* C++ has been used for computational code and OpenMP for parallel computation.

1. Designing a Carbon-Neutral Battery Swap and Supercharger Station

* Probability, random variables, and stochastic Processes for weather data, customer arrival and cost estimation.
* Python for mathematical computation and plotting.
* **Thesis:** A Call Recognition Approach for Endangered or Threatened Chorusing Amphibian Species Using Deep Learning Architectures.
* Developed ‘Endangered or Threatened Chorusing Amphibian Species call detection system’
* Processed audio data using Python Pandas, NumPy, different data structures and algorithms
* Deployed Deep Learning algorithms for call recognition task using Scikit-learn, Keras, TensorFlow

**BSc, Electrical and Electronic Engineering** March 2016

Rajshahi University of Engineering & Technology, Rajshahi, Bangladesh

* **GPA:** 3.42 out of 4.00 (major)

**Courses:** Machine Learning, Distributed and High-Performance Computing Systems, Computer Architecture and Arithmetic, Regression Analysis, Wireless Communication, Probability, Random Variables & Stochastic Processes, Microprocessor and Microcomputer System, C and C++, Data Structure and Algorithms, SQL Essential Training, Learning SQL Programming, MATLAB, Digital Signal processing

**PROFESSIONAL** **EXPERIENCE**

**Texas State University, San Marcos, Texas**

*Graduate Research Assistant* June 2019 -December 2020

* Worked on the detection of endangered amphibians using Audio Data Processing and Deep Learning Architectures.

**Texas State University, San Marcos, Texas**

*Graduate Instructional Assistant* September 2018 - December 2020

* Grading and assisting Machine Learning (Python), Digital Logic Circuit course.

**Robi Axiata Ltd., Dhaka, Bangladesh**

*Telecom Project Engineer* April 2016 - July2018

* Monitored and analyzed quality of network coverage, network faults of 3G and 4G covering sites using software tools (WinFIOL for Ericsson and M2000 for Huawei) and ensured proper operation.

**TECHNICAL SUMMARY**

* Programming Languages: Python, MATLAB, C, C++, Assembly Language, R
* Artificial Intelligence and Machine Learning: Scikit-learn, Keras, TensorFlow, PyTorch
* Parallel Computing Toolkits: OpenMP, MPI, CUDA, OpenCL
* Small single-board computers: Raspberry Pi, NVIDIA Jetson Nano
* Data Analysis and Database Management: SQL, MySQL, Numpy, Pandas, Matplotlib
* Applications: LATEX, Git

**RESEARCH EXPERIENCE**

1. **Shafinaz Islam**, Damian Valles, Michael Forstner, A Houston Toad Call Detection Initial Approach Using Gated Recurrent Units for Conservational Efforts. Accepted in the Intermountain Engineering, Technology and Computing (IETC), 2020

* Used Digital Filtering, Framing, Windowing, Mel Frequency Cepstral Coefficient (MFCC) features for audio signal processing.
* Experimented Gated Recurrent Units (GRU) as deep Learning Architecture for toad call detection.
* Showed 98.82% training accuracy, 97.50% validation accuracy and 88.57% test accuracy for toad call detection.

1. **Shafinaz Islam**, Damian Valles, Michael Forstner, “Performance Analysis and Evaluation of LSTM and GRU Architectures for Houston toad and Crawfish frog Call Detection” Accepted in 2020 11th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference (UEMCON)

* Used Digital Filtering, Framing, Windowing for audio signal processing.
* Used and compared MFCC and SSC as audio features.
* Experimented and compared Gated Recurrent Units (GRU) and Long Short-Term Memory (LSTM) as deep Learning Architecture for Houston toad and Crawfish frog call detection.
* LSTM with MFCCs audio features, and a 20% validation split produces the highest accuracy for detecting Houston toad and Crawfish frog calls.

1. Imrul Kayes, **Shafinaz Islam**, Jacob Chakareski, The Network of Faults: A Complex Network Approach to Prioritize Test Cases for Regression Testing, Springer Journal of Innovations in Systems and Software Engineering. Volume 11, Issue 4, Pages 261-275, 2015

* Modelled system fault dependencies as a directed graph and identified leading faults.
* Used a centrality aggregation technique which considers six network representative centrality metrics to identify leading faults in the fault dependency network.
* Compared and showed the effectiveness of the proposed approach with traditional techniques.