

Software engineer experienced in Machine Learning, Cloud Computing, and Web & Mobile application development. Leading a team of engineers to drive new business opportunities and improve the Quality of Life of our end customers.

EXPERIENCE

- **Therap (BD) Ltd.**

Team Lead, Machine Learning

Dhaka, Bangladesh

Jul 2019 - Present

Therap (BD) Ltd. is a wholly-owned subsidiary of **Therap Services LLC., USA**. Therap is a **HIPAA compliant**, web and mobile application suite providing comprehensive solutions to organizations supporting people with **Intellectual and Developmental Disabilities (IDD)**.

- **Protected Health Information (PHI) in Video:**

- * Detect persons in video using the Detectron2 PyTorch object detection model.
- * Identify, annotate, and track the faces of IDD individuals using OpenCV and the InsightFace project.
- * Dynamically blur individuals for whom the staff watching does not have access.
- * Initiate the adoption of HIPAA-secure, unobtrusive group home monitoring using CCTV cameras.

- **Customer Engagement:**

- * Train a binary classification Deep Learning model in TensorFlow to predict the likelihood of customers leaving Therap using monthly usage statistics.
- * Identify similarities and differences between customers by grouping them into clusters using the unsupervised K-Means algorithm.
- * Implement a feature recommender system using the Matrix Factorization collaborative filtering technique.
- * Enable Marketing and Customer Support teams to engage with customers more effectively.

- **Pulse Oximetry:**

- * Build a Progressive Web App to track blood oxygen saturation (SpO2) and heart-rate readings.
- * Implement the frontend in React and GraphQL, and the backend using AWS Amplify, AppSync, DynamoDB, and Cognito.
- * Send real-time SMS and Email alert notifications using AWS Lambda, SNS and SES.
- * Significantly improve caregivers' ability to monitor IDD individuals for COVID-19.

- **Sleep Analysis:**

- * Implement comprehensive sleep profiles of IDD individuals using sensor readings from IoT sleep mats.
- * Plot hypnograms, bed in/out statistics, heart and respiration rate diagrams in Python Plotly library.
- * Inform caregivers of the quality of sleep of IDD individuals.

- **Therap (BD) Ltd.**

Full Stack Software Engineer, System Architecture

Dhaka, Bangladesh

Oct 2016 - Dec 2019

- **Model:**

- * Modelled complex Entity-Relationships in Oracle RDBMS.
- * Wrote highly optimized queries in PL/SQL to store, retrieve, and process large amounts of relational data.

- **View:**

- * Generated dynamic HTML content using the JSP template engine.
- * Implemented event-driven, asynchronous frontend components and plugins using JavaScript and jQuery.
- * Utilized the Bootstrap CSS library to design the application UI.

- **Controller:**

- * Implemented core application features and modules in Java, Spring MVC and Hibernate ORM.
- * Exposed REST APIs for core system resources and functions.
- * Consumed and built systems on top of third-party APIs.
- * Wrote unit and integration tests.

EDUCATION

- **BRAC University** Dhaka, Bangladesh
Bachelor of Science in Computer Science Jan 2012 - Aug 2016
 - **CGPA:** Final Year: 3.89/4.00; Overall: 3.75/4.00.
 - **High Distinction:** Graduated with High Distinction.
 - **Merit-Based Scholarship:** Awarded Merit-Based Scholarship valued at CAD 12,000.
 - **Teaching Assistant:** Worked part-time as a TA for Data Structures and Discrete Mathematics.
- **Machine Learning Nanodegree** Dhaka, Bangladesh
Udacity Nov 2019 - Jan 2020
 - **Project:** Trained a multi-class classification LSTM model to detect Activities of Daily Living using accelerometer and gyroscope sensor data. More details [here](#).

AWARDS AND HONOURS

- **President's Volunteer Service Award** Washington D.C., USA
President's Council on Service and Civic Participation Aug 2008
 - **Recognition:** Awarded President's Volunteer Service Award from the President's Council on Service and Civic Participation for outstanding service to community and country.
- **YES Leadership Summit** Colorado, USA
Sister Cities International Mar 2008
 - **Recognition:** Successfully completed this summit consisting of challenging and interactive activities designed to improve leadership skills. Applied those skills in a variety of physically and emotionally demanding situations.
- **Youth Exchange and Study (YES) Program** Seattle, USA
Aspect Foundation Aug 2007 - Sep 2008
 - **Recognition:** One of twenty students from Bangladesh to successfully complete the US Department of State funded YES Program. A humbling experience that prides itself in leadership, cultural values, and acceptance.
- **International School Cricket Premier League** Lucknow, India
International Cricket Council (ICC) Jan 2011
 - **Recognition:** Represented Bangladesh as a cricketer in the first ever International School Cricket Premier League organized by City Montessori School & Degree College and sponsored by the ICC.

REFERENCES

- **Warren S. Gifford, Ph.D.**
President Emeritus, Therap Services LLC.
 - **Positions:**
 - * Former Executive Director in Applied Research, Bell Communications Research.
 - * Former Head of Digital Network Planning Department, Bell Laboratories.
 - * Former Special Rapporteur for Digital Network Interfaces in Study Group XVIII in CCITT.
 - * Co-author, Driving Tomorrow: Our Roadmap to Sustainable Transportation, Infrastructure and Cities.
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