

Software engineer experienced in Machine Learning, Cloud Computing, and Web & Mobile application development. Shaping the future of Remote Patient Monitoring in Group Homes using Computer Vision and improving the Quality of Life of intellectually and developmentally disabled patients.

## EXPERIENCE

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- **Therap (BD) Ltd.** Dhaka, Bangladesh  
*Team Lead, Machine Learning* *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 patients with Intellectual and Developmental Disabilities (IDD).

  - **Remote Patient Monitoring:**
    - \* Use RGB cameras and edge compute to detect patients at fall risk and alert staff for immediate intervention.
    - \* Log patient bed-in and bed-out events.
    - \* Detect when a patient has left or entered the room.
    - \* Identify interactions between the patient and any unknown individual.
  - **Customer Engagement:**
    - \* Train a binary classification model to predict the likelihood of organizations leaving Therap.
    - \* Identify similarities and differences between customers using the K-Means clustering algorithm.
    - \* Implement a feature recommender system using Collaborative Filtering technique.
  - **Pulse Oximetry:**
    - \* Build a Progressive Web App in React, GraphQL, and AWS Amplify to track SpO2 and heart-rate readings.
    - \* 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 and other diseases.
  - **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.
    - \* Inform caregivers of the quality of sleep of IDD individuals.
- **Therap (BD) Ltd.** Dhaka, Bangladesh  
*Full Stack Software Engineer, System Architecture* *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 style the application UI.
  - **Controller:**
    - \* Implemented core application features and modules in Java, Spring MVC and Hibernate ORM.
    - \* Exposed REST endpoints for core system resources and functions.
    - \* Consumed and built services on top of third-party REST APIs.
    - \* Wrote unit and integration tests.
- **We Are X** Dhaka, Bangladesh  
*Machine Learning Consultant* *Jan 2019 - Mar 2019*

Online social-media customer service platform for large enterprises.

  - **Text Classification:**
    - \* Implemented a multi-class text classification model to classify customer queries written in Bengali and English.
    - \* Improved customer service representative productivity by 3x.

## EDUCATION

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- **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 Deep Learning model to detect Activities of Daily Living using IMU sensor data from smartwatches.
    - \* Obtained an accuracy of 90%.

## AWARDS AND HONOURS

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- **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:** Selected to complete 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.
- **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

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- **David L. Turock, Ph.D.**  
*Director, Biometric Innovation Laboratory, Therap Services LLC.*
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