Kanchan Chowdhury

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Research Interests

Machine Learning, Big Data Systems, and Geospatial Data Analytics

Education

- **Arizona State University** — Tempe, Arizona
  PhD in Computer Science — *Aug. 2018 – Jul. 2023 (Expected)*
  - **Graduate Courses**: Distributed Database Systems, Fundamentals of Statistical Learning, Data Mining, and Statistical Machine Learning
- **Chittagong University of Engineering and Technology** — Chittagong, Bangladesh
  Bachelor of Science in Computer Science and Engineering — *Mar. 2010 – Nov. 2014*
  - **Undergraduate Courses**: Programming in C/C++, Object Oriented Programming, Data Structure, Algorithms, Software Engineering, and Artificial Intelligence

Experience

- **Data Systems Lab @ASU** — Tempe, Arizona
  Research Assistant — *Aug. 2018 - Present*
  - **Spatial Data Analysis**: Research on processing geospatial data and big data systems applying machine learning.
  - **NLIDB Benchmark**: A benchmark for evaluating natural language to SQL query synthesis approaches
- **Arizona State University** — Tempe, Arizona
  Teaching Assistant — *Aug. 2018 - Present*
  - **Courses**: Distributed Database Systems, Data Processing at Scale, Object Oriented Programming and Data Structure, Principles of Programming with Java and Python, Programming of Programming with C++
- **Gagagugu PTE LTD** — Dhaka, Bangladesh
  Software Engineer — *Jan. 2017 to Jun. 2018*
  - **Projects**: Android applications featuring functionalities related to social networking and communication systems.
- **Le Chef Plc** — Dhaka, Bangladesh
  Android Application Developer — *Aug. 2015 - Dec. 2016*
  - **Projects**: Android applications featuring services such as online order and reservation systems for restaurants
- **ICT Division** — Bangladesh
  Trainer of Mobile Application Development — *May 2015 - Jul. 2015*
  - **Responsibilities**: Trained about 100 undergraduate students on topics related to Android development.

Projects

- **Hotspot Analysis**: Calculating Getis-Ord statistic of NYC Taxi Trip data, performing spatial queries and range join.
- **Optimizing Hyperparameters**: Comparing Bayesian optimization and grid search for optimizing CNN parameters.
- **NLIDB-Bench**: A benchmark to evaluate state-of-the-art natural language to SQL synthesis approaches
- **Multi-layer Neural Network from Sketch**: Sketch implementation of a multi-layer neural network and functions such as activation, loss, dropout, forward and backward propagation, etc. using numpy.
- **End-to-End Database Communicator**: An end-to-end system takes a natural language question through user voice, translates the voice to text question, generates SQL query for the question, summarizes the SQL output and plays the audio of the summary.

- **SparkSQL Data Visualization**: Consists of two parts: an API in Scala retrieves the data stored in SparkSQL using spark clusters and a Javascript front end visualizes the data using deck.gl visualization library.
- **GGfone**: An Android application featuring international calls, wifi calls, and credit balance transfering between users.
- **GagaGugu**: An Android application featuring social networking and communication such as messaging, post sharing.
- **Image Classification**: Implementation of CNN using Keras framework for classifying MNIST dataset.
- **Tic Tac Toe**: An Android OS based childhood game supporting multi-player via Bluetooth connection.

Publications

- **Kanchan Chowdhury**, Venkata Vamsikrishna Meduri, Mohamed Sarwat; NLIDB-Bench: A Benchmark for Evaluating Natural Language Interfaces to Relational Databases.
- Venkata Vamsikrishna Meduri, **Kanchan Chowdhury**, Mohamed Sarwat; Recurrent Neural Networks for Dynamic User Intent Prediction in Human-Database Interaction. *22nd International Conference on Extending Database Technology*, 2019.
- **Kanchan Chowdhury**, Lamia Alam, Shyla Sarmin, Safayet Arefin, Mohammed Moshiul Hoque; A Fuzzy Features Based Online Handwritten Bangla Word Recognition Framework. *18th International Conference on Computer and Information Technology*, 2015
- Md. Ashraf Uddin, **Kanchan Chowdhury**, Liton Kumar Ray; Finding, Counting, and Highlighting all Triangles in Large Graphs. *International Conference on Robotics,Electrical and Signal Processing Techniques*, 2019

Technical Skills

- **Languages**: Java, Python, C, C++, Scala, Javascript, SQL, HTML
- **Tools and Libraries**: Apache Spark, Hadoop, AWS, PyTorch, Scikit-learn, Keras, TFLearn, Android SDK
- **Databases**: MySQL, PostgreSQL, SparkSQL, SQLite, MongoDB
- **Others**: Deck.gl Data Visualization Library, Jupyter Notebook, Rest API, Various Google APIs, CSS, MVP Design Pattern, JSON Parsing

Participation and Awards

- Recipient of CIDSE Doctoral Fellowship at Arizona State University for the academic year 2018-2019.
- Recipient of Honors award from Chittagong University of Engineering and Technology for excellent academic result.
- 2nd Runner-up at National Hackathon organized by ICT Division of Bangladesh in 2014 for proposing solution to a national problem in country.
- 2nd Runner-up at Mobile Application Code Hub organized by Bangladesh University of Engineering and Technology in 2014.
- 6th at Inter University Programming Contest organized by Chittagong University of Engineering and Technology in 2012.
- Recipient of University merit scholarship in seven terms out of eight terms of undergraduate studies.

Problem Solving

I solved 305 problems in UVa Online Judge, 46 problems in Light OJ and participated in many programming contests both in real-time and online. I also answered some questions in StackOverflow.