Diwas Bhattarai

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SUMMARY

Interested in data analysis, visualization, and modeling that translate into meaningful insights.

EDUCATION

PhD in Computer Science
Louisiana State University • Baton Rouge, LA • 2022

Bachelor of Science in Computer Science
Minor in Mathematics • Southeastern Louisiana University • Hammond, LA • 2013 • Graduated *Magna Cum Laude*

EXPERIENCE

PhD Candidate
Louisiana State University **Fall 2015 – Present, Baton Rouge, LA**
Key research activities include scientific data modeling, design, and implementation of novel Parallel Coordinates Plot features for multidimensional data analysis, end-to-end development of web-platform for modeling, visualization, and analysis purposes. Conduct periodic feedback and project milestone presentations with domain experts. Currently working on silicate melt viscosity data modeling under a wide temperature-pressure regime using machine learning techniques. Published work in "Parallel Coordinates-based Visual Analytics for Materials Property" (2019). Pages 83-95.

Instructor
Louisiana State University **Spring 2018, Fall 2018, and Fall 2020, Baton Rouge**
Instructed classes of over 60 undergraduate students for introductory C++ programming language. Responsibilities include making syllabus, lecturing, and designing assignments and examinations.

Application Developer Intern
T. Baker Smith **Summer 2018, Spring 2019, Fall 2019, Baton Rouge, LA**
Built visualizations to monitor real-time IoT data containing pressure, temperature, surface level, and other metrics for pump stations across Louisiana. Worked in developing big-data pipeline, anomaly detection, constructing marketable devices, and hardware prototyping. Also developed internal cross-platform iOS tablet application.

Software Developer Analyst
Amedisys **2013 - 2015, Baton Rouge, LA**
Developed new features and assisted in maintaining MercuryDoc web application. Evaluated native and multi-platform mobile frameworks. Designed, built, and maintained bridge software between existing public facing web application and remote third-party software using Rx framework. Extended Visual Studio intellisense to support AngularJS components and built developer automation tools for Visual Studio.

Undergraduate Research
Southeastern Louisiana University **2011 - 2012, Hammond, LA**
Used natural language processing algorithms to infer user sentiment on Twitter trends. Analyzed Twitter user credibility to create focus groups for sentiment analysis.

Undergraduate Research
Southeastern Louisiana University **2010 - 2011, Hammond, LA**
Analyzed interferometric data of metal under stress using image processing algorithms. Published work in “Optical Measurements, Modeling, and Metrology 5” (2011). Pages: 75-81.

PROJECTS

End-to-end music generation **Spring 2021**
Experimented with text-to-speech models such as SampleRNN and WaveNet to generate traditional music from Nepal. Investigating SIREN audio parameterization which could be useful for downstream tasks such as classification, event recognition, and others.

GAN based audio reactive music video generator **Spring 2020**
Original StyleGAN model trained on war painting images was used to generate music video for progressive rock band from Nepal. Audio features such as transients and frequency content over time were used to modify latent vectors. Currently training StyleGAN2-ADA on various datasets such as indigenous Nepali paintings, frames from various movies, and others.

Jazz Chords Prediction **Spring 2017**
Built a prototype predictive model to aid in jazz music composition. The model could provide options for next possible chord given any chord progression. The prediction model was built by training on text data using a variation of WORD-RNN.

Gender Determination Using Voice **Spring 2017**
Survey of algorithms with focus on feature selection for real valued continuous data to predict gender label. Train data consisted of audio features such as mean frequency, skewness, kurtosis, and many others. Some of the models used in this project were Naïve Bayes, Decision Tree, Random Forest, and others.

SKILLS

Python, Javascript, Typescript, Java, C#, C++, Azure Platform, PowerBI, Power Apps, MySQL, MongoDB, Generative Multimedia, Audio Production