# Bikash Shrestha

Graduate Research Assistant with a history of working in the field of deep learning. Skilled in Python, Javascript, React, Web Development, Android Development, and Linux. Strong education professional with a Bachelor's degree focused in Computer Engineering and 3 years of experience as a software engineer.

**Phone: (314) 437-6573**
**Email:** shresthabikash637@gmail.com
LinkedIn | GitHub | Website

## Skills/Tools

### Languages

Python, Javascript, Typescript, HTML, CSS, PHP, C, C++, SQL

### Frameworks/Libraries/Tools

React, React Native, Redux, Node, Flask, Django, WordPress, Bootstrap, REST API, Server Side Rendering in React, Git, Jira, Slack, Trello, Microsoft Azure, LaTex, MongoDB, Amazon Skills

NumPy, Pandas, Matplotlib, TensorFlow, Keras, Scikit-Learn, Jupyter-Notebook, Google Colab, Conda

### Machine Learning

Deep Convolutional Neural Network (ResNet, VGG, MobileNet), Supervised and Unsupervised Learning, Linear Regression, Logistic Regression, Decision Tree, KNN, K-Means Clustering, Naive Bayes, Kernel Density Estimation, K-Fold Validation, Data Augmentation

## EXPERIENCE

### **Graduate Researcher in Deep Learning/Teaching Asst.** @ UMSL, St Louis, USA

Sep 2019 - Current

My research includes analyzing data, data preprocessing, feature engineering, building deep learning models, and assessing and evaluating the results through qualitative and quantitative analysis.

- Developed a deep learning pipeline to predict the quality of protein's multiple sequence alignments (MSAs), Alignment-Score. Used a modified version of the EfficientNet architecture. The pipeline predicts a score within a range between 0 and 1 that represents the quality (1 being the highest).
- Developed a modified version of Deepmind's Alphafold pipeline for structure prediction, Alphafold-Non-Docker.
- Developed a web server called DISTEVAL for evaluating predicted protein inter-residue distances using qualitative analysis (Heatmap, Chord diagram, 3D model) and quantitative analysis (MAE, RMSE, LDDT, Precision).
- Poster presentation of DISTEVAL in CASP14 and one of the top 10 groups in CASP14 competition.
- Worked as a tutor and a grader for different courses like Computer Graphics, Operating System, Computer Networking, Object-Oriented Programming

### **Software Engineer** @ BlackBox Technologies, Kathmandu, Nepal

April 2019 - Aug 2019

Worked as a React Native developer to develop a mobile application called SkyApp related to smart home automation.

### **Software Developer (Part-time, Remote)** @ Murcul, Hongkong

Oct 2018 - Jan 2019

- Worked as a frontend developer for various projects like Juven, Epoints, Rainforest, Formbuilder using React, Typescript, Redux.
- Worked as a DevOps for the development of a mobile application named Bump using Microsoft azure pipeline.

### **Software Engineer** @ Infinia Hub, Kathmandu, Nepal

Oct 2016 - March 2019

- Worked as a frontend developer in an e-commerce website called InfiniaStores focusing on Supermarket products using React, Redux, and Django. Also, worked as a data analyst.

- Worked on a website called InfiniaBiz using React, Redux, and Django
- Built an app using React Native for the store owner or admin of InfiniaStores to manage orders and handle the warehouse.
- Built a website using React with server-side rendering: CKG Int
- Developed a custom react library: Deal-Materialize
- Worked on a couple of WordPress projects: Crustpnb, Perplex Solutions, Aspire Career Education Consultancy

## PROJECTS

### COVID-19 Visualization — *Web App*

Built a website to visualize the COVID-19 cases around the globe using react and Mapbox.
https://shrestha-bikash.github.io/covid19-map-visualization/

### Deep Learning Projects

- **ImageClassifier** — *App*
  Built an app with React Native which captures the image and classifies it using deep learning. Tensorflow library was used to create the deep learning models (MobileNet). [ImageClassifier]
- **MaskDetector** — *App*
  Built an app using React Native and TensorFlow which detects face masks. A custom model was trained and built using the teachable machine platform. [MaskDetector]
- **Music Genre Classification**
  Simple implementation of CNN for music genre classification using Marsyas Dataset in google colab. Audio files were converted into spectrograms which were used for the training. [MusicGenreClassification]
- **Mood Detection**
  A deep learning-based project where facial expressions ('neutral', 'angry', 'happy', 'sad') of a person are predicted using CNN architecture. MMA Facial Dataset from Kaggle was used in this project for training and validation. [MoodDetection]

**See GitHub for more...**

## EDUCATION

### University of Missouri-St Louis, USA — Masters (*Graduate*)

Aug 2019 - Current

Currently pursuing a Master's in Computer Science. Graduate Research Assistant of Dr. Badri Adhikari from Deep Learning Lab at UMSL.

### Institute of Engineering Pulchowk, Nepal — *Bachelor (Undergraduate)*

Nov 2012 - Sep 2016

Completed my bachelor's in computer engineering from the most reputed engineering college of Nepal in 2016.

## Awards/Publications

- Shrestha, B., & Adhikari, B. (2021). Scoring Protein Sequence Alignments Using Deep Learning. [bioRxiv]
- Pakhrin, SC; Shrestha, B; Adhikari, B; KC, DB. Deep Learning-Based Advances in Protein Structure Prediction. International Journal of Molecular Sciences. 2021. [IJMS]
- Adhikari, B., Shrestha, B., Bernardini, M. et al. DISTEVAL: a web server for evaluating predicted protein distances. BMC Bioinformatics 22, 8 (2021). [BMC]
- Adhikari, B., Shrestha, B., Bernardini, M. Real-valued protein distance prediction. CASP 14, 2020 Abstract.
- Shrestha, B; Vaidhya, M; Sainju, B; Khaniya, K; Shakya, A. "Personality Traits Analysis from Facebook Data''. In *2017 21st International Computer Science and Engineering Conference (ICSEC)*. [IEEE Xplore]