Manjulata Chivukula

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Profile

A well rounded data science and machine learning scientist with experience is data collection, processing, analysis, development of algorithms, extraction of insights, and presentation to decision makers to solve problems with the appropriate use of data. Delivered data analysis reports and insights to decision makers on marketing reports for Indiana University Communication and Indiana Pacers. Past experience of more than 10 years on delivering web applications using *C#*.

Education

Indiana University — Bloomington, IN
Master of Science in Data Science; GPA: 3.93/4.0 — *Expected December 2019*

Relevant Coursework: Advanced Machine Learning, Machine Learning with Signal Processing, Image Processing, Computer Vision, Deep Learning, Learning Theory and Probabilistic Graphical Models, Advanced Database Management Systems, Elements of Artificial Intelligence, Data Mining, Introduction to Statistics, Data Visualization, Algorithm Design and Analysis, High Performance Big data systems

Indiana University — Bloomington, IN
Master of Science in Computer Science; GPA: 3.80/4.0 — *December 2009*

Jawaharlal Nehru Technological University — Hyderabad, AP, India
Bachelor of Technology in Electronics and Communication Engineering; GPA: 3.32/4.0 (8.18/10.0) — *Aug 2001 - May 2005*

Skills

- **Languages**: Python, C, R, SQL, Java, C#, C++, PHP, Javascript, CSS, XML, XSLT, Apex, Visualforce
- **Technologies**: Tableau, Alteryx, GCP, AWS, GitHub, Apache Spark, Docker, Microsoft Team Foundation Services (TFS)
- **Libraries**: PyTorch, Scikit-Learn, Numpy, Pandas, Jupyter, OpenCV, PIL, ASP.NET framework, .NET framework

Academic Experience

Indiana University — Bloomington, IN
Research Assistant — *May 2019 - Present*

- Developed deep learning based convolution neural network models (in collaboration with post-doctoral associate in Computer Vision Lab in Indiana University) to predict the time of failure of electronic circuits based on electromigration analysis of CCD and thermal images
- Developing a deep learning classification model using pytorch for facial recognition of Asian elephants to help with animal conservation efforts github link
- Creating a dataset of animal action (walking, feeding, staring etc.,) video clips to help train and test object detection and classification models

Indiana University — Bloomington, IN
Graduate Teaching Assistant — *August 2018 - December 2018*

Instructor for graduate course in Elements of Artificial Intelligence

Data Science Projects

- **Variational Autoencoder for disentangling latent spaces in images github link** : A probabilistic graphical model for disentangling latent spaces in images
  - Studied and implemented various models using variational autoencoder (VAE) like basic VAE, β-VAE, VAE+GAN, Adversarial symmetric VAE using MNIST dataset to understand the role of VAE in disentangling latent spaces in the image and analyzed the performance of the learnt latent code in image classification tasks
- **Variational Bayesian Approach to Movie Rating Prediction** : github link Implemented Variational EM algorithm (proposed in the paper: https://www.cs.uic.edu/ liub/KDD-cup2007/proceedings/variational-Lim.pdf) using probabilistic matrix factorization to perform movie rating prediction and computed RMSE values using various datasets and rank values
- **Deep learning for Audio Processing** : github link
  - Implemented deep learning models such as Siamese network to perform speaker verification task
  - Implemented RNN model using LSTM for Speech denoising
  - **Privacy Preserving for Audio Synthesis** - Implemented GAN and Cycle GAN (generative adversarial network) models in order to perform audio synthesis on the input audio signal data
- **Deep learning models for Computer Vision tasks**:

- Used Pytorch framework to build Resnet image classification model and analyzed accuracy of the model in semi-supervised setting using synthetic data
- Studied and implemented deep learning models for image-to-image translation tasks like Multimodal Unsupervised Imageto-Image translation (MUNIT), Unsupervised Image-to-Image translation (UNIT) on amazon and office datasets
- Studied and implemented various GAN models like BicyleGAN, CycleGAN etc. using amazon and office datasets to perform data augmentation using GANs network

- **Contribution to open source software (Dipy)**: github link
  - Contributed to Dipy source by implementing SSD (sum of square differeces metric) for affine registration for 3D MRI images.

- **Animal Care and Control of Adopted Animals - Bloomington Animal Shelter**:
  - Developed visualizations using the animal shelter data in order to draw insights on the outcomes of the animals based on the intake reasons, and incoming months

- **Data Science for Good: Kiva Crowdfunding - Kaggle project**:
  - Implemented linear regression model to estimate the welfare level of the borrower in the region where Kiva has active loans utilizing the training set provided by Kiva and other data sources that provide poverty level estimate for a region.
  - Implemented random forest classification model to perform classification of the borrower into various labels describing their poverty;

- **Projects in Aritificial Intelligence**:
  - Implemented Optical Character Recognition (OCR) and Part-of-speech tagging NLP problem using HMM (Hidden markov models)
  - Implemented A* algorithm to solve 15-puzzle game
  - Implemented Pichu game that is version of chess using minimax and alpha-beta pruning algorithm
  - Implemented Naive Bayes algorithm to perform tweet classification;

Professional Experience

Indiana University Studios Bloomington, IN
Data Engineer *May 2019 - Present*

- Designed and implemented python APIs to extract data from various social media data channels like twitter, facebook, instagram etc. for Indiana University (IU) and all its campuses
- Used ETL (Alteryx) process to Extract, Transform and Load the data into stage area.
- Implemented twitter sentiment classification model using Naive Bayes algorithm using data feed from twitter
- Implemented interactive tableau dashboard with incremental refreshes of data on the tableau server
- The goal of social media dashboards is to provide insight into social media traffic for IU such that a successful social media strategy can be setup to maximize brand awareness and brand positioning for IU.
- Developed research analysis report using qualitative and quantitative data available for Indiana University-Purdue University Indianapolis (IUPUI) in order to draw insights into the values provided by the research and provide recommendations on ways to enhance student enrollments in IUPUI

Pacers Sports and Entertainment (NBA) github link Indianapolis, IN
Part-time Data Analyst *August 2018 - May 2019*

- **WNBA (Indiana Fever basketball) Visualization**: Developed visualizations for the WNBA game survey data to help understand the impact of in-game entertainment, food and beverage services and other in-game services on ticket sales; analyzed the data to help with identifying potential season ticket purchasers and the promotions that need to be provided;
- **WNBA Customer Renewal Profile**: Develop "renewal profile" for the users by performing cluster analysis of the user data coming from various sources likes Salesforce (for demographic data), internal databases (for ticket transaction data) and user survey data. This is to help Pacers marketing staff to understand the various segments of users such that they can better cater to their needs and improve ticket sales.

Kelley School of Business, Indiana University Bloomington, IN
Snr. Systems Analyst *July 2016 - Aug 2018*

- **Apex Salesforce**: Developed and deployed forms in Salesforce using Apex and Visual force code
- **ASP.NET Web Applications**: Used ASP.NET and ASP.NET core to build web applications to help staff and faculty at Kelley School of Business, Indiana University

IU Communications, Office of VP of Engagement, Indiana University Bloomington, IN
New Media Developer *Jan 2014 - July 2016*

- **IU Framework sites**: Developed and launched websites that are mobile friendly for various clients across Indiana University utilizing the latest front-end frameworks
- **Client Requirement Analysis**: Worked with clients across the University to gather requirements to help develop websites for the appropriate communication of the goals of various Indiana University departments

- **IU Health Center Kiosk**: Developed a web application for the IU Health Center in PHP to serve as KIOSK mechanism facilitating check-in and checkout processes for the health center clients. The applications connects to eClinicalWorks patient database
- **IU Health Center Scheduler**: Developed PHP based web application using Laravel framework to implement online scheduler for the IU Health Center that helps IU staff/faculty and students to make appointments at the health center
- **Marketing Lock-up Application**: Designed and implemented PHP based web-application using Laravel framework called Marketing-lockup that enables various departments across Indiana University to create marketing lock-ups - route for approval and download lock-ups in various file formats like jpeg, png etc. upon approval

Application Development Team, Office of Research Administration, Indiana University Bloomington, IN

Systems Analyst/Programmer *Jan 2010 - Jan 2014*

- **ASP.NET/PHP Web Applications**: Designed and implemented several applications to help ORA staff at Indiana University that involved various framework technologies like ASP.NET and concrete5 PHP framework
- **Agile Programming Environment**: Developed an expertise and skill with working in agile development environment and efficiently switching between various projects and programming languages with minimal loss of development time

Biomedical Applications, Research Technologies University Bloomington, IN

Gerald L. Bepko Student Intern *May 2009 - Aug 2009*

- **Java J2EE Application**: Worked on National Gene Vector Laboratories website https://www.ngvbcc.org/Home.action a Java J2EE based web application by providing enhancements and maintenance for the application

Computer Science department, Indiana University Bloomington, IN

Summer Research Assistant *May 2009 - August 2009*

- **KML**: Designed and developed a visualization tool in KML for performing gap analysis of meteorological sensor coverages in USA on Google Earth.
- **Developers Manual**: Developed tool developer's manual as a part of the project.

BroadComm Inc. Hyderabad, India

Software Engineer *May 2005 - Jan 2007*

- **Guest VLAN and Voice VLAN**: Developed C code for new features Guest VLAN and Voice VLAN targeted for various production level Fastpath Software releases
- **Developers Manual**: Prepared Functional Specification, High Level Design Document, Unit Testing document and Integration Test plan for the new software features Guest VLAN and Voice VLAN

Additional Experience & Achievements

- Winner of state merit scholarship from Govt. of Andhra Pradesh, India.
- Awarded certificate of merit at the end of senior year of undergraduate education for standing second in the school.