Dileep Nackathaya

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Education

- **North Carolina State University** — Raleigh, NC, USA
  Master of Science in Mechanical Engineering; GPA: 3.75/4.00 — *Aug 2010 – Dec 2012*
  Specialization: Computational Fluid Dynamics (CFD)
- **Visvesvaraya Technological University** — Belgaum, India
  Bachelor of Engineering in Mechanical Engineering; Grade: First Class (74%) — *Sep. 2006 – July. 2010*

Continuous Learning

- **Statistics, Machine Learning, Data Science** — Udupi, India
  Self-learning (progress documented on LinkedIn and GitHub) — *Jan 2018 – Present*
  - **Statistics and Data Science MicroMasters (offered by MITx on edX)**: Four graduate level credit-eligible courses with challenging assignments and projects in Probability, Statistics, Data Analysis, and Machine Learning along with a comprehensive Capstone exam *(Skills: Python, R, PyTorch, NumPy, SciPy, Matplotlib, Scikit-learn).*
  - **Machine Learning (taught by Prof. Andrew Ng on Coursera)**: An introductory machine learning course with eight programming projects (*Skills: MATLAB/GNU Octave*).
  - **Other courses**: The Analytics Edge, Intro to R for Data Science, SQL for Data Science, Using Python for Research, CS50: Intro to Computer Science, Intro to Computation and Programming using Python

Experience

- **John Zink Hamworthy Combustion** — Tulsa, OK, USA
  Computational Fluid Dynamics Engineer, R & D Group — *Jun 2013 – Aug 2017*
  - **Simulation and Analysis**: Created CFD models of industrial burners, flares, thermal oxidizers, and vapor recovery systems and analyzed simulation data. Prepared customer reports on findings of these analyses.
  - **Product Development**: Leveraged data from CFD simulations and analyses to provide insights on designing new products and improving existing ones.
  - **Troubleshooting**: Analyzed data from customer sites and ran simulations to troubleshoot on-site product issues.

Projects

- **Digit Recognition**: Used multiclass SVM, softmax regression, and convolutional neural networks to recognize single and overlapping digits. Compared performance of these algorithms using different metrics. (*Python, Scikit-learn, PyTorch*)
- **Automatic Review Analyzer**: Used Perceptron and Pegasos algorithms for sentiment analysis of Amazon reviews. Used cross-validation for hyperparameter tuning and did feature engineering to improve performance. (*Python, Numpy*)
- **Netflix Movie Ratings**: Used the EM algorithm to generate Gaussian mixtures for collaborative filtering to predict movie ratings and compared it to k-Means clustering. Used Bayesian Information to pick clusters. (*Python, Numpy*)
- **Reinforcement Learning**: Taught an agent to play a simple game using the parameterized Q-learning algorithm. Implemented a neural network to learn the parameters for maximal reward. (*Python, Numpy, PyTorch, Matplotlib*)
- **Predicting Office Space Prices**: Implemented multivariate polynomial regression from scratch in Python for predictions including formatting the dataset, gradient descent algorithm, hyperparameter tuning, and visualization.
- **Spam Detection**: Used kernelized SVM algorithm to build a spam classifier in GNU Octave including preprocessing email text and extracting features for training.
- **Statistical Analysis using R**: Used data from Social Science studies to compute p-values, confidence sets, and test hypotheses. Set up multivariate linear models and visualized results with ggplot2.

Technical Skills

- **Programming and Scripting Languages**: Python, R, MATLAB/GNU Octave, SQL, C, Shell, Fortran
- **Operating Systems**: GNU/Linux, Windows
- **Version Control**: Git. Used a bit of SVN in the past.
- **Libraries and Packages**: NumPy, Pandas, SciPy, Matplotlib, Scikit-learn, PyTorch, Tensorflow, NLTK, ggplot2
- **High Performance Computing**: Used AWS and company/university clusters to do large parallel computations.