

# Dileep Nackathaya

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## EDUCATION

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

## CONTINUOUS LEARNING

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- **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 final Capstone exam (*Skills: Python, R, PyTorch, NumPy, SciPy, Matplotlib, Scikit-learn*).
  - **Deep Learning Specialization (offered by deeplearning.ai on Coursera)**: Currently pursuing this program with five courses on fundamental Deep Learning algorithms. (*Skills: Python, Tensorflow*).
  - **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

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- **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

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- **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

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