**Utkarsh Deepak**

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Summary

* Strong Mathematical and Analytical ability for problem solving using both conventional and programmatic approach
* Completed Bloomberg certification for Market Concepts to learn about Financial Services
* Quick and flexible to learn and adapt in new environments
* Completed IBM certification for Data Analytics
* Presented potential solution of industrial problem - To maximize the oxygen diffusion in Hydroponics

Core Skills

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| --- | --- | --- |
| * Statistics & Probability | * Python | * Matlab |
| * SQL | * R | * SPSS |
| * Linux * Classification | * Open Refine * Regression | * IBM Cloud * Clustering |

Projects

* Application of classification algorithms – KNN, Decision Tree, SVM and Logistic Regression to build a classifier to predict loan defaults on a historical dataset and comparing the model using Jaccard Index, F1 Score and Log-Loss [[Loan Default Classifier](https://github.com/UtkarshDpk/Loan-Classifier)]
* Explored, Segmented and Clustered the neighborhoods in the city of Toronto using web-scraping library of Python and Foursquare API [[Neighborhood Analytics](https://github.com/UtkarshDpk/Neighbourhood-Analytics)]
* Linearization of Differential Equations and determining the steady state to produce a planar linear model that represents the nonlinear model only at a certain point. Also simulated a Doublet Test (used to differentiate signals) with the nonlinear and linearized models to show the suitability of the linear model to represent the original nonlinear equation solution with small step changes [[Linearization](https://github.com/UtkarshDpk/Linearization-of-ODE)]
* Implemented a simple trading strategy of longing when fast signal is larger than slow signal signifying upward trend [[Trading Strategy](https://github.com/UtkarshDpk/trading)]

Education

**MSc in Mathematical Modelling**

University of Limerick, Limerick, Ireland, 2:1 Sep’ 2017 – Aug’ 2018

* Cross Hedging of an asset using Futures to get Hedge Ratio and calculating Margin call of Margin Accounts of Future Contracts using Excel [[Derivatives](https://github.com/UtkarshDpk/Derivatives)]
* Time Series Data Analysis of number of retweets of a hashtag for popularity prediction to fit a stochastic model called Hawkes Process [[Hakwes](https://github.com/UtkarshDpk/tweets)]
* Performance Comparison of Optimization Methods using Line Search Algorithms [[Optimization](https://github.com/UtkarshDpk/Optimization)]
* Solved Boundary Value Problems of Non-Linear Systems analytically and computationally by implementing Fixed Point Iteration, Newton’s Method and Damped Newton’s Method using Matrix Algebra and discussed the computed solutions and relative performance of the methods to show that discretization error is reduced by increasing the number of partitions of the data [[BVP](https://github.com/UtkarshDpk/Scientific-Computing/tree/master/Assignment%202)]
* Implemented 4th order Runge-Kutta, Explicit Euler and Predictor-Corrector methods for Initial Value ODEs, making them Conditionally Stable for Stiff Systems and comparing with Implicit methods like Implicit Euler which is Unconditionally Stable [[Ordinary DEs](https://github.com/UtkarshDpk/Scientific-Computing/tree/master/Assignment%204)]
* Calculated Eigen Values and Eigen Functions of second order variable coefficient Differential Operator subject to Boundary Conditions using Finite Difference Scheme and compared first 30 smallest Eigen Values computed numerically and analytically [[Eigen Value Computation](https://github.com/UtkarshDpk/Scientific-Computing/tree/master/Assignment%203)]
* Quadrature using Trapezoidal and Tailored Trapezoidal method, Numerical methods for ODEs as well as Heat Equation (a Parabolic PDE) in Python [[Heat Equation](https://github.com/UtkarshDpk/Scientific-Computing/tree/master/Assignment%205)]

**Bachelor of Technology in Mechanical Engineering**

Uttar Pradesh Technical University (UPTU) Lucknow, U.P., India Sep’ 2009 - May 2013

Aggregate 70 %

Work Experience

**Programmer Analyst**

Tata Consultancy Services, India  March 2014 – Aug 2017

* Responsible for the development of various functionalities and REST services in Spring framework using J2EE design patterns
* Solved the problem of Continuous Integration by implementing and maintaining a GIT repository
* Designed and Developed a Distributed System to capture, process and display data from different sources which increased throughput by 20 %
* Used SQL and NoSQL databases – Oracle and MongoDB for creating standalone and web-applications and analyzing the data for developing business models

Achievements and Awards

* Completed IBM certification for Data Analytics
* Completed Bloomberg certification for Market Concepts
* Secured 78% in National Talent Search Examination
* AIR – 1311 in National Science Talent Search Competition
* GRE - 317/340 (Quant - 164/170, Verbal - 153/170), TOEFL - 109/120