Vishak H Pillai

Mathematics and Statistics, IIT Tirupati

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in vishakhp

Coursework

Real Analysis, Complex Analysis, Metric Spaces, Differential Equations, Measure Theory, Linear Algebra, Multivariable Calculus, Stochastic Processes, Statistical Inference, Probability Theory, Algebra, Statistical Finance, Regression, Python, SQL, Regular Expressions, Bash Shell (Basic), Docker

Achievements

- Awarded Merit Scholarship by IIT Tirupati in all semesters.
- Ranked in Top 3.8% in All India - IIT JAM Mathematics and in top 0.26% in Delhi University Mathematics entrance. Qualified GATE Mathematics.
- Cleared an All-India exam to be selected as an Air Traffic Controller. Conducted by AAI, India (rank 22).
- Awarded Tower rating by Airports Authority of India. Responsible for the safety of aircraft flying within a 5 NM radius of Mumbai International Airport.
- Recognized for excellent contribution to Air Traffic Control by General Manager (ATM) during airspace closure and peak air traffic. Achieved 1000+ flight movements in a single day with team making Mumbai the world's busiest single runway airport.

Positions of Responsibility

- Class Representative of Batch from 2020-22 at IIT Tirupati.
- Career Development Representative of batch from 2021-22 at IIT Tirupati.
- Co-Founded Coding Club for Mathematics students, IIT Tirupati.

Online Certifications

- In Progress - IBM Data Engineering Professional Certificate.
- In Progress – Full Stack Developer online course – Bosscoder.
- Data Science & Machine Learning (NIELIT Chennai). Awarded A grade. Mini-Projects completed: (i) House Price prediction based on Linear Regression, (ii) Predicting whether an individual will buy insurance or not, etc.
- Scientific Computing and Python, WorldQuant University, Pass-Honors.

Extra Curriculars

- 1st Prize in "Lights Camera Action" conducted by Actomania Club, IIT Tirupati.
- Organized Networking events like Farewell Ceremony for Senior Batch and Freshers' Party for incoming batch at IIT Tirupati.
- 1st Prize in "Glam it up" in Tirutsava.
- Meditation. Mentored by Dr. Chavan (Nisargadatta Maharaj Trust).

Education

- **Indian Institute of Technology (IIT), Tirupati, India**
  Master of Science, Mathematics and Statistics (2020 - 2022)
  CGPA: 8.93/10 (Overall Rank – 2 in class).
- **College of Engineering, Thiruvananthapuram, India**
  Bachelor of Technology, Applied Electronics & Instrumentation (2008-2012), CGPA: 7.41/10, 1st Class
- **Independent Coursework, Anand Institute of Mathematics, Delhi, India**
  Mathematics (Mar 2013- Dec 2013)

Research/Projects

- **Implementation of Numerical Analysis Techniques in Python**
  (Guide: Dr Panchatcharam Mariappan, IIT Tirupati, Feb 2022-May 2022)
  - ➤ Building a package on Numerical solutions of nonlinear equations through Bisection Method, False Position Method, Modified False Position Method, Newton-Raphson Method, Secant Method, Fixed Point Iteration Methods; Techniques in Numerical linear algebra; Numerical integration.

- **Implementation of Poisson Regression and Logistic Regression in Python**
  (Guide: Dr Sudheesh Kattumannil, Indian Statistical Institute, March 2022-March 2022)
  - ➤ Built a Poisson Regression Model on Mosquito data to determine the optimal concentration of insecticide. Also, built a logistic regression model to predict graduate admission. Deduced that GRE score is statistically insignificant in determining graduate admission using Wald's Test.

- **Analysis of Stock Price of Reliance Industries Limited**
  (Guide: Dr Eagambaram Narayanan, IIT Chennai, Nov-Dec'22)
  - ➤ Estimation of Drift and Volatility Parameters of the Geometric Brownian Motion. Estimation of Interest Rate assuming Risk Neutral GBM.
  - ➤ Worked out cost of European Call Option using Black-Scholes and discussed pros and cons of risk-neutral Geometric Brownian Motion.

- **Multiple Regression Statistical Analysis**
  (Guide: Dr G.Ravindran, ISI Chennai, Feb-Mar'21)
  - ➤ A statistical analysis project built from scratch based on LSE best fit in Python for any order of data. Features: Partial F Test on coefficients, Global F test, ANOVA table, Confidence intervals on coefficients, prediction intervals on new and mean response, extra sum of squares method.

- **Linear Algebra Package**
  (Guide: Dr Panchatcharam Mariappan, IIT Tirupati, June-July'21)
  - ➤ Built a Linear Algebra Package in C++ and Python using object-oriented techniques. **Features:** Matrix Multiplication, Addition, Subtraction, Implementation of Conjugate Gradient Algorithm and Gaussian Elimination, Trace, Determinant, Matrix Inverse, Operations on Sparse Matrices using CSR format.

- **2048 game**
  (Guide: Dr.Panchatcharam Mariappan, IIT Tirupati, Feb-Mar'21)
  - ➤ Built the 2048 game in Python from scratch.

Professional Experience

- **Data Engineer, Flax & Teal, India**
  (16 June 2022 –Present)
  - ➤ Worked on developing a web-scraping/Linux-distro-scraping tool for 3000+ Linux packages for Open Invention Network. Used Python (Pandas, Beautiful Soup), Bash Shell programming, Regular Expressions, Docker.

- **Mathematics and Statistics Instructor, Pathways Coaching classes, Virar**
  (June 2018 –Present)
  - ➤ Taught Math and Statistics courses to college students.

- **Air Traffic Controller, Airports Authority of India, Mumbai**
  (26 Oct 2015 - 15 Jan 2020)
  - ➤ Tower Controller (Assistant Manager) at Mumbai Int'l Airport.
  - ➤ Recognized for excellent controlling by General Manager (ATM).

- **New Associate Program Analyst, Goldman Sachs, Bangalore, India**
  (4 June 2012 – 8 Mar 2013)
  - ➤ Software Developer in the Equity Derivatives Tech Team.
  - ➤ Worked in proprietary firm language – SLANG and C++.

- **Summer Analyst, Goldman Sachs, Bangalore, India**
  (6 June 2011 – 26 July 2011)
  - ➤ Intern in Direct Market Access Technology Team.
  - ➤ Re-designed an application and reduced its execution time from 10 hours to 30 minutes; Offered pre-placement offer.