Aatika Sinha

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SUMMARY

- I am a well-organized, highly motivated IT professional with 8+ years of experience in aviation,education and banking, adept at delivering high-quality service under tight deadlines. Master's grad with a strong focus on troubleshooting and business/technical solutions.Being Polyglot, I work well in teams, thrive in challenging tasks, and am committed to exceeding expectations. Dependable and flexible, I am quick study and ready to expand (Head On!).

Education

- **The Pennsylvania State University** — University Park,Pennsylvania,USA
  Master's of Engineering (ELIM): CGPA: 3.83/4.0, Minor: Business Analytics — *Jan 2022 - August 2023*
- **Sikkim Manipal Institute of Technology** — Sikkim, India
  Bachelor of Technology (ECE): CGPA: 3.5/4.0 (First Class) — *June 2014 - June 2018*

Research Publication, Book Chapter and Patents

- **Book Chapter** — Pennsylvania, USA
  Springer Nature Switzerland — *Aug 2025*
  - **Sinha, A.**, & Pisal, P. (2025). *Taler: Balancing accountability and privacy in electronic payments.* In S. K. Gupta, J. Rosak-Szyrocka, R. Rena, C. S. Shieh, & G. Erkol Bayram (Eds.), *The impact of artificial intelligence on finance: Transforming financial technologies* (Vol. 53, pp. 529–550). Springer. https://doi.org/10.1007/978-3-031-92916-$8_2$7
  - **Abstract:**This paper introduces Taler, an electronic payment system that balances customer privacy with merchant accountability. Using a Chaum-inspired protocol, it efficiently manages divisible transactions while providing anonymity for customers and transparency for merchants. Comparative analysis shows Taler is cost-effective and privacy-preserving, offering a practical alternative to traditional and blockchain-based payment systems.
- **Trademark** — Pennsylvania, USA
  United States Patent and Trademark Office(USPTO) — *June 2025*
  - **Sinha, A.** (2025, June 10). *MIO GELDISPENSE* (U.S. Trademark Serial No. 98811440). United States Patent and Trademark Office. Status: Live.
- **Conference and Journal** — Lucknow/hybrid, India
  Indian Institute of Management Lucknow, Main Campus — *Feb 2025*
  - **Sinha, A.** (2025, January 30–February 1). Manufacturing workers in developing countries and the role of monitoring health through virtual health assistance (VHA). In *Proceedings of the 4th Annual International Research Conference (AIRC) and Doctoral Workshop* (p. 233). Indian Institute of Management Lucknow. retrieved from https://sites.google.com/iiml.ac.in/airc04/home (ISBN: 978-93-342-6135-6)
  - **Abstract:**This paper investigates Virtual Health Assistance (VHA) technologies—including AI, telemedicine, and wearable devices—to improve health access for manufacturing workers in developing countries. It examines enabling technologies, implementation barriers, and impacts on worker health and productivity, highlighting the need for government support and policy initiatives.
- **Conference and Journal** — Delhi/Hybrid, India
  ABS International Journal of Management — *Dec 2024*
  - **Sinha, A.** (2024, December). Manufacturing workers in developing countries and the role of monitoring health through virtual health assistance (VHA). *ABS International Journal of Management, 12*(2). ISSN 2319-684X (Print). retrieved from https://absjournal.abs.edu.in/ABS-Journal-Volume-12-isuue-2-Dec-2024/article-7.pdf
  - **Abstract:**This paper investigates Virtual Health Assistance (VHA) technologies—including AI, telemedicine, and wearable devices—to improve health access for manufacturing workers in developing countries. It examines enabling technologies, implementation barriers, and impacts on worker health and productivity, highlighting the need for government support and policy initiatives.
- **Competition and Journal** — Pennsylvania, USA
  National Academies, Transportation Research Board — *July 2022*
  - Pecaitis, J., **Sinha, A.**, Boulos, J., & Parisi, A. (2022, July). Environmental interactions stormwater management. In *ACRP University Design Competition: 2022 winners* (Airport Environmental Interactions Challenge – Third Place; Facility advisor: M. Handley). Transportation Research Board, The National Academies of Sciences, Engineering, and Medicine. https://trb.org/ACRP/DesignWinners2022.aspx
  - **Abstract:**A team of four Engineering Leadership students at Pennsylvania State University addressed the ACRP stormwater management challenge at State College Airport. They designed an on-site system to collect and treat standing water more effectively than the current drainage ditch, reducing pollutants and outsourcing needs. Feasibility analysis, stakeholder consultation, and prototyping confirmed the solution's potential for environmental improvement and possible economic benefits in similar airports.

- **Competition and Journal** Pennsylvania, USA
  Virginia Space Grant Consortium, Airport Cooperative Research Program(ACRP) *July 2022*
  - Pecaitis, J., **Sinha, A.**, Boulos, J., & Parisi, A. (2022, July). *Environmental interactions stormwater management.* (Airport Environmental Interactions Challenge – Third Place; Facility advisor: M. Handley). Virginia Space Grant Consortium, on behalf of the Airport Cooperative Research Program, Transportation Research Board. retrieved from Environmental Interactions Stormwater Management (Third Place – Penn State)
- **Conference and under-review Publications** Pennsylvania, USA
  Springer Lecture Notes in Mechanical Engineering series *Aug 2025*
  - **Sinha, A.**, & Reddy, R. A. (Under review). Partial ranking methodologies for noisy measurement data and their application in business process analysis. Submitted to *Lecture Notes in Mechanical Engineering* (Springer).
- **Patent and under-review Publications** Pennsylvania, USA
  United States Patent and Trademark Office *May 2025*
  - **Sinha, A.** (2025). *Mio Geldispense product* (U.S. Patent Application No. 30/005,362) [Patent pending]. United States Patent and Trademark Office.
- **Conference and under-review Publications** Pennsylvania, USA
  Dr. D. Y. Patil School of Science & Technology *Apr 2025*
  - Mayekar, O., **Sinha, A.**, Vekariya, V. R.,& Vadde, P. (2025, April). Capturing SARS-CoV-2 mutations with NLP. *GC4T-2025: Wireless Communications and Networking Conference*, Dr. D. Y. Patil School of Science Technology, Pune, India. (Proceedings under review at IEEE Xplore, Scopus-indexed).

Work Experience

- **Travelers Aid International @ Philadelphia International Airport** Philadelphia, PA,USA
  Strategy/Information Consultant *May 2024 - Present*
  - Drive on-time sourcing of key software in initiatives within cost and regulatory requirements. Align Integrated Services sourcing strategies with other business unit strategies to maximize leverage.
  - Built strong cross-functional relationships within the various internal business units and departments to further align on strategic category vision and savings opportunities.
  - Instigated and supported supply Base optimization and strategic priorities through leverage of the Enterprise spend.
  - As a progressive thinker, I inquired out ways to drive efficiencies, with intelligence of what is best in class.
  - Involve in cyclic team meetings and strategy discussion for better business functions.
  - Took accountability, using various technical devices and applications including MS office, Google suits, live stream application for customer among other responsibilities as required to control operations.
  - Analyzed Customer engagement pattern, scope of development in interpersonal relationships to make a better and safe environment for all including training to the fellow team members.
  - Initiated Lead sourcing to make a better and safe environment for all including Government officials, passengers, stakeholders, other services etc.
- **Empire MG inc. and Prime Flight Aviation Services (PHL)** Philadelphia, PA,USA
  Customer Operations/Sales and Hospitality *Dec 2023 - Jun 2024*
  - Business strategy and process improvement involving customer management/engagement leading to effective stakeholder and customer acquisitions, CRM through application monitoring, documentation and analytics.
- **TATA Consultancy Services** India/USA
  Systems Engineer - Business/Data Driven Project *Jan 2022 - Present*
  - Identified which independent variables (over the data set) appear to have greatest impact on home valuation, and the nature of the relationship. Based on final model, gave forecast prediction and confidence intervals. Followed evaluating nature of data dependent or independent, putting data summary, scaling the limits of data summary, scaling variables for plots, Box plots for outlier Gap check, Scatter plots and interpretations, hypothesise the proposed regression model, developing regression model fitted coefficients, testing regression model predictive ability, performing validity checks on various parameters including independence of error, equal variance, normal distribution, checks for no unduly influential outliers et al. Further, characterising uncertainty and significance for regression model coefficients.
  - ***Impact***: Using regression model and based on provided data set it was found that the highest corrected median value of owner-occupied homes could be predicted between prices of 51,568 and 64,011, with 95/100 confidence. About 86/100 of the variation is supported by the regression model, so it can be used to estimate the trend in corrected median value of owner-occupied homes.

- Characterised effectiveness of LDA, K-NN, neural network and logistic regression classification methods for predicting default as a function of the predictor variables student, income, and balance. Made a recommendation on whether any or all are useful. This was carried through evaluating nature of data dependent or independent, putting data summary, scaling the limits of data summary, scaling variables for plots,Box plots for outlier Gap check, Scatter plots and interpretations, hypothesise the proposed regression model, developing multiple regression model including the Linear, K-Fold cross validation, Gaussian process model, Neural Network model fitted coefficients, testing and compared regression model predictive ability, performing validity checks on various parameters including independence of error, equal variance, normal distribution, checks for no unduly influential outliers et al. Also, performing the SMOTE LDA classification as a solution for imbalance in the sample.
- ***Impact***: Using regression model comparison it was found that LDA with SMOTE is recommended for predicting default as it can improve the recall and sensitivity of the model and it has more balanced accuracy, Informedness than the other models. Hence, recommend the LDA model as per the sample to the management for classification because its Accuracy is the highest of all which is 0.972 and its compute time is the least among all other methods which is 2.37.
- Examined the SDGE (SanDiego Electricity) time series data and made a preliminary recommendation on best forecast approach for predicting hourly energy use one month in advance. Examined the double exponential (DEWMA) and double seasonal Holt Winters (DSHW) time series forecasting models in the SanDiegoElectricity through Creating DEWMA and DSHW Forecasting model, prepared accuracy measure on training data, analyse accuracy measures of error on training set followed by performing validity checks and interpretation.
- ***Impact***: The RMSE, MAE, MAPE values in DEWMA model are:76893.95, 66567.42, 3468.472, respectively.By comparing with value below in DSHW model, it was found that DEWMA had a much larger uncertainty error in prediction. The RMSE, MAE and MAPE values in the DSHW model found :217.36,152.15 and 7.81 respectively. Leading to prefer DSHW time series forecasting method for predicting hourly energy use a month in advance for California ISO.
- Financial Data Analysis using the data on the production costs and profits over a 16 month period for a manufacturer with international customers using Power BI tool. Created dashboards using meaningful insights into the company's sales and financial position.
- Using the MS Excel Descriptive analytics and based on given data from an EduToy company Categorised the customers based on age and gender. Along with determining the spend amounts that fall in the top 20 percent of all transactions (in dollars). Also, determined the products that generated the sales revenue falling in the top 25 percent of all revenue contribution in the sample, reported the current inventory level, quantity of order and supplier of each of these best-selling products. The data was also used to find out the proportion of all given transactions that were conducted through the use of different credit card like American Express, Discover, MasterCard and Visa.
- Using Prescriptive Analytics involved in creating Excel Macros, VBA to create function helping to avoid repetitive tasks. Decision- making through solver for optimisation and transport/sales planning. Decision Analysis through Decision Tree construction driving the best possible route to follow in production sequence.

Systems Engineer - Developer Aug 2020 - Jan 2022

- Provided bug fixing,support and development of newly generated user data fields as per Business requirement.
- Creation and Customising of new UI changes and loading the fetched data from UI to Database through Ajax.
- Enhancements to the Downloadable Form data that customer can directly use. Worked and handled client's ever-changing requirements along with additional assigned tasks.
- ***Impact***: Achieved the expected client requirements on the development with less than**10%** testing errors.

Assistant Systems Engineer— Client: Leading European Bank Nov 2019 - July 2020

- Induction and overview of different policies existing in the Organization including Technical skills, Soft skills as well as Personal Overall Development. Technical training in Core Java, DBMS, HTML, CSS validated through extensive Exit Assessment.
- Introduction to Agile Methodologies in the Development Operation life-cycle. Also gained, hands-on experience with Continuous Integration and Deployment tools like Jenkins, Maven build tool, Apache Tomcat Server, Bit bucket as part of DevOps training.

- **The Pennsylvania State University** University Park, PA,USA
  Administrative Assistant for Research and Development (AgScience) *June 2023 - Aug 2023*
  - Content Management and administration research for the University Official Grant listings. Technically updating and researching Grants through trusted sources.
  - Technology depended Database updating and record creations.

Teaching Assistant (TA) - ENGR501,BA411,EE420 May 2022 - May 2023

- Graded the submission as per the defined protocols. Held doubt session as and when a student required.
- Taught the course and Consulted the students with all the doubts regrading the course work. Updated the course material and made announcements related to the courses.

Skills and Coursework

- **Tech-languages**: C++, Core Java, HTML5, JavaScript, JSON, Python,R,Oracle Sql, MSExcel, MsOffice,MSProject, Verilog, Software Development Life Cycle (SDLC),Six Sigma, Analytics,CAPSIM,Strategy, Operations and Management.
- **Coursework and tool**: Anaconda,Sql Developer, Eclipse, WinSCP,Probability and Statistics,Tableau, ProjectLibre, PowerBI, Mailchimp, Lasso, Plone,File maker, Adobe Illustrator, Live Agent app, VBA.

Miscellaneous- Project Experience

- Airport Cooperative Research Program - A University Design Competition for Addressing Airport Needs with focus on Storm Water Management. Project launch and strategies as per the course. Associated with teams from different countries and organisations.
- Conducted quantitative Analysis in many business reports in the course structure using R, Power BI etc. Implemented User smartphone controlled command following and locomotion of the surveillance robot.

Internship

- **Maven Silicon** Bengaluru, India
  Design and Verification Trainee *July 2018 - May 2019*
  - **VLSI Project**: Designed the AHB to APB bridge as an AHB slave which converts AHB transactions to APB transactions by implementing pipelining at the AHB slave interface. Thus, the bridge supports AHB burst transfers.Architected the block level structure for the Router design and verification.
- **Delhi Metro Rail Corporation** Delhi, India
  Industrial Intern *June 2017 - July 2017*
  - Real-time experience of working mechanism inside well established Indian Government metro operations including Signalling,Automated fare collection (AFC),fiber-optic transmission system (FOTS).

Awards and Extra-curriculars

- Nationally (USA) placed and acknowledged for the ACRP (Airport Cooperative Research Program) design challenge for implementing a solution based on "Environmental Interaction Storm-water management."
- Awarded multiple recognition Badges for T performance by Philadelphia International Airport (PHL), USA.
- Member of (ECSA)Electronics and Communication **Student Council (2016-2017)** in College.
- Runner up award in Inter- Department Chess competition. Senior Co-ordinator in Annual College Fest KAALRAV.