Harsh Anand

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Contact Information

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Education

University of Virginia, Virginia, USA

- Ph.D. in Systems Engineering — 2021 – 2026 (Expected)
- Advisor: Prof. Negin Alemazkoor

The Pennsylvania State University, Pennsylvania, USA

- M.S. in Data Analytics, GPA: **4/4** — 2019 – 2021
- Thesis: *Energy Infrastructure Resilience and Economic Impacts: Modeling, Data Analytics, and Metrics*
- Committee: Mohamad Darayi (chair), Raghvinder S. Sangwan, Satish M. Srinivasan, Ashkan Negahban and Colin J. Neill

Manipal University, Karnataka, India

- B.Tech in Information Technology — 2011 – 2015

Peer-reviewed Publications

1. Anand, Harsh and Darayi, Mohamad, "A Probabilistic Approach to Modeling Power Network Component Importance Considering Economic Impacts," accepted at *The Institute of Industrial and Systems Engineers (IISE) Annual Conference & Expo 2021*
2. Anand, Harsh and Darayi, Mohamad, "Power Network Component Vulnerability Analysis: A Machine Learning Approach," accepted at 2021 *Complex Adaptive Systems Conference*
3. Jaiswal, Devendra, Anand, Harsh, Srinivasan, Satish, and Darayi, Mohamad, "A Data-Driven Model to Generate Disruptive Scenarios for Infrastructure Resilience Studies," accepted at 2021 *Complex Adaptive Systems Conference*
4. Saxena, Akshay, Anand, Harsh, Pradhan, Tribikram, and Mishra, S. R. (2015). "A Hybrid Chaining Model with AVL and Binary Search Tree to Enhance Search Speed in Hashing." *International Journal of Hybrid Information Technology*, 8(3), 185–194
5. Pradhan, Tribikram, Anand, Harsh, and Goyal, Akul (2014). "THA - A Hybrid Approach for Rule Induction System using Rough Set Theory, Genetic Algorithm and Boolean Algebra." *Global Journal of Researches in Engineering: Numerical Methods*, 14(1), 11

Under review

1. Anand, Harsh, Darayi, Mohamad, "Modeling and Analyzing Energy Infrastructure Resilience considering Economic Impact," submitted to *Energy Policy*
2. Sharma, Rahul*, Anand, Harsh*, Badr, Youakim, Qiu, Robin, "Time-to-Event Prediction using Survival Analysis for Alzheimer's Disease Progression," submitted to *Alzheimer's & Dementia: Translational Research & Clinical Interventions* (*Equal contribution)

Technical Presentations

1. Anand, Harsh and Darayi, Mohamad, "A Probabilistic Approach to Modeling Power Network Component Importance Considering Economic Impacts," Technical Presentation in the session *Data and System Analytics Application II*, IISE 2021 Annual Meeting, May 2021
2. Anand, Harsh and Darayi, Mohamad, "Modeling and Analyzing Energy Infrastructure Resilience considering Economic Impact," Technical Presentation in the session *Equilibrium Modeling of the Environmental and Institutional Aspects of Interregional Electricity Trade*, INFORMS 2020 Annual Meeting, November 2020

Poster Presentations

1. Anand, Harsh and Darayi, Mohamad (2021). "Modeling and Analyzing Energy Infrastructure Resilience considering Economic Impact," IISE QCRE/DAIS Best Student Poster Session
2. Anand, Harsh, Sharma, Rahul, Mungee, and Atharva (2020). "Projecting Patterns with Causal Influences in a Dynamic Ecosystem for Retail Sales Forecasting," Penn State Poster Competition, Malvern, PA
3. Mani, Alakesh, Anand, Harsh, and Venkat, Akula (2020). "A Qualitative Study of Multi-Channel Marketing Campaigns using Market Mix Modeling," Penn State Poster Competition, Malvern, PA
4. Anand, Harsh (2020). "Modeling and Analyzing Energy Infrastructure Resilience considering Economic Impact," Penn State Poster Competition, Malvern, PA

Research Experience

Research Assistant - **University of Virginia**, VA, USA	May'2021 – Present
Research Assistant - **The Pennsylvania State University**, PA, USA	Nov'2019 – May'2021
Research Assistant – **Dept. of Information Technology, MIT, Manipal**, India	2013 – 2015
Research Intern – **Indian Institute of Technology (IIT), Guwahati**, India	Summer 2013

Professional Experience

Data Science Intern - **Swiss Re**, New York, NY, USA	Jun'2020 – Aug'2020
Senior Data Scientist - **Kearney**, Mumbai, India	Jan'2017 – May'2021
Machine Learning Engineer - **A.I. Research Lab, TCS**, Kochi, India	Aug'2015 – Nov'2016
Data Science Intern, Semantic Search - **DataWeave Inc.**, Bangalore, India	Jan'2015 – Jun'2015

Research Interest

- **Methodological domains**: machine learning, deep-learning, system modeling and simulation, data-driven decision making, mathematical modeling and optimization
- **Application domains**: energy systems, interdependent infrastructure systems, healthcare, computational sustainability, freight transportation, logistics and supply chains management

Technical Skills

- *Programming Languages*: Python, R, SQL, Java
- *Data Science*: Data Mining, Predictive and Prescriptive Modeling, Quantitative Analysis, Parametric & Non-Parametric Statistical Modeling, Deep Learning, Time-series forecasting, Design of Experiments, A/B Testing, ANOVA, Bootstrapping, Data Structures and Algorithms
- *Development*: Spark (PySpark, Spark SQL), Hadoop, MapReduce, Graph DB, HBase, Neo4j, CI/CD Jenkins
- *Project Management*: Project Planning, Agile Development, Leadership, Problem Solving
- *Visualization/Others*: Power BI, Tableau, Elastic Search, Excel (Advanced), AIIMS, Minitab, KNIME, Alteryx, AWS, IBM Bluemix, Palantir Foundry

Awards and Fellowships

Outstanding Student Award in Data Analytics, Penn State University	2021
Penn State Valedictorian, Class of 2021	2021
The Web Conference 2021 Student Scholarship	2021
Warren V. Musser Fellowship in Entrepreneurial Studies	2020 – 2021
Penn State Chancellor's Scholarship (*Merit Award*)	2019 – 2020
AICTE Scholarship (*Tuition Waiver*), Manipal University	2011 – 2015

Competitions

Finalist - Mentor and Participant - 2021 Nittany AI Challenge	Ongoing
Third Place – Innovation Design Competition @ 2021 IISE	2021
Best Student Pitch - Lion Cage: Annual competition for early-stage entrepreneurs	2021, 2020
Winner – Freestyle O.R. Supreme Case Competition @ 2020 INFORMS	2020
Judge and moderator - Smart India Hackathon - Sentiment Analysis of Code-Mixed Languages	2020

Placed in top 10% for prototyping Video-To-Text Summarizer - 2020 Nittany AI Challenge 2020

Runner's Up - Penn State Poster Competition - Retail Sales Forecasting 2020

Winner of Wawa - HCL Hackathon: Sales forecasting for Wawa using LSTM and Prophet 2019

Ranked top 1% in 4th International Math Olympiad and 13th National Science Olympiad

Leadership

Student Senator, School of Graduate Professional Studies, Penn State University 2019 – 2021

Global Programs Senate Committee, Penn State University 2020 – 2021

Student Council and Curriculum Change Committee, Manipal University 2012 – 2015

Class Representative, Manipal University 2012 – 2015

Educator for Non-profit, Chala Janjatiya Vikas Sanstha 2009 – 2019

Services

Webmaster - **OR/MS Tomorrow, INFORMS** 2021 – Present

Session Chair

2021 Complex Adaptive Systems Conference Upcoming
Session 4: System Analysis
Session 7: Applications of AI
Session 11: Data Science and Analytics

Reviewer

International Journal of Medical Informatics

Affiliations

Institute for Operations Research and the Management Sciences (INFORMS), Institute of Industrial and Systems Engineers (IISE), The Honor Society of Phi Kappa Phi, Complex Adaptive Systems Conference

References

Dr. **Mohamad Darayi**
Assistant Professor, Systems Engineering
The Pennsylvania State University
E-mail: mud415@psu.edu

Dr. **Youakim Badr**
Associate Professor, Data Analytics
The Pennsylvania State University
E-mail:yzb61@psu.edu

Dr. **Satish M. Srinivasan**
Assistant Professor, Information Science
The Pennsylvania State University
E-mail: sus64@psu.edu

Dr. **Tribikram Pradhan**
Assistant Professor, Information & Communication Technology
Manipal University
E-mail: tribikram.pradhan@manipal.edu