NAYAN CHAKRABARTY

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SKILLS SUMMARY

Programming skills: Python, Java, Gurobi, AMPL, CPLEX.
Research Areas: Network Optimization, Monte Carlo Simulation, Mixed Integer Programming, Reinforcement Learning, Supply Chain Management, Optimization in Reliability, Inventory Management.

EDUCATION

P.hD. Candidate in Industrial Engineering *Expected: December 2024*
University of Arkansas, Fayetteville, AR | GPA 3.667
Master's in Industrial and System Engineering *August 2020*
Ohio University, Athens, OH | GPA 3.875
Bachelor of Science in Industrial and Production Engineering *October 2014*
Khulna University of Engineering and Technology (KUET), Bangladesh | GPA 3.86

WORK EXPERIENCE

Research Assistant, University of Arkansas, Fayetteville *July 2021 - Present*
- Developed a Markov Decision Process (MDP) framework for optimal routing policies in network recovery
- Applied Reinforcement Learning to maximize network flow, and improving network efficiency
- Developed a multi-objective optimization model to evaluate redeployment policies using Non-dominated Sorting Genetic Algorithm
- Implemented an efficient Monte-Carlo simulation method to estimate the network reliability
- Developed an efficient incremental search algorithm to optimize pathfinding in Wireless Sensor Network (WSN), significantly reducing overall simulation runtime.
- Conducted empirical evaluations to demonstrate the efficiency of the proposed approach in terms of CPU time, precision, and accuracy of estimates, showcasing significant gains in efficiency that enable optimization over the set of feasible policies

Teaching Assistant, University of Arkansas, Fayetteville *August 2020 - June 2021*
- Graded and provided constructive feedback on Java code assignments, helping students improve their programming skills and problem-solving abilities
- Contributed to the creation of challenging and thought-provoking quiz questions to assess students' understanding of key topics covered in the course
- Conducted in-person math-solving sessions and facilitated discussions to enhance students' understanding of Engineering Economic concepts

Graduate Assistant, Ohio University, Athens *August 2018-July 2020*
- Implemented a multiple Kanban Cards system for managing supply inventories in nursing units
- Developed an mixed integer optimization model to minimize the overall inventory cost and solved it using AMPL
- Successfully resolved a model involving 3,520 variables and 5,120 constraints, achieving a high service level while reducing costs by 27% compared to using a two-Kanban card system

Lecturer, Khulna University of Engineering and Technology, Bangladesh *April 2015-July 2018*
- Taught Maintenance Management and Production System Design courses, with a focus on emphasizing asset reliability and preventive manufacturing strategies
- Mentored senior students in their capstone projects, providing guidance and support throughout the project development process

PUBLICATIONS AND PRESENTATIONS

Peer Reviewed Paper
- S. Mehidi, **N. Chakrabarty**, H. Mohiuddin (2014). An Application of Artificial Neural Network (ANN) Process to Assess Risk in Cement Industries in Bangladesh. Ind Eng Manag 2014;pp:1–6.
- M. F. Rabbi, **N. Chakrabarty**, J. Shefa, (2018). Implementation of fuzzy rule-based algorithms in p control chart to improve the performance of statistical process control. International journal of research in industrial engineering, 7(4), 441-459.
- D. Sormaz, **N. Chakrabarty** (2019). Comparative Analysis of Cell formation Algorithms with Alternative Routings, Procedia Manuf., vol. 39, no. 2019, pp. 1029–1037, 2019.

Under Review Paper
- **N. Chakrabarty**, KM Sullivan. Time-based redeployment of multi-class nodes for reliable wireless sensor network coverage. **(Submitted to Computers & Industrial Engineering Journal)**

Ms Thesis
- **N. Chakrabarty** (2020). A Methodology for Supply Inventory Management for Hospital Nursing Units Considering Service Level Constraint, Thesis, Ohio University.

Invited Presentations
- **N. Chakrabarty**, KM Sullivan. Time-based Redeployment Of Multi-class Nodes For Reliable Wireless Sensor Network Coverage, INFORMS 2022 Annual Meeting, Indianapolis, Indiana, USA.
- **N. Chakrabarty**, KM Sullivan. A Partial Survival Signature Method to Identify Time-Based Policies for Redeploying Nodes into a Wireless Sensor Network, INFORMS 2023 Annual Meeting, Phoenix,Arizona, USA.

LEADERSHIP EXPERIENCE

- **Conference session chair at INFORMS 2023 Annual Meeting**
  - Session Title: New Methods for Inventory Policies

- **Conference session chair at INFORMS 2022 Annual Meeting**
  - Session Title: Telecommunication Networks

- **Scholar experience team member at Envision Experience** *June 2019-July 2019*

ACHIEVEMENTS AND AWARDS

- Reginald R. "Barney" & Jameson A. Baxter Graduate Fellowship, University of Arkansas
- Industrial Engineering Departmental Scholarship, University of Arkansas
- Prime Minister Gold Medal Award for securing the highest CGPA in Bachelor of Science (Hons) examination from the Faculty of Mechanical Engineering
- Travel Grant Award for 2022 and 2023 to attend INFORMS conference
- Chancellor Award in Bachelor of Science study

MEMBERSHIP

- Institute of Industrial and Systems Engineers (IISE)
- Institute of Operation Research and Management Science (INFORMS)
- Industrial Engineering and Operations Management (IEOM) Society
- Production and Operations Management Society (POMS)
- American Society for Engineering Education (ASEE)