

# MD. MAHBUBUL KABIR NISHAT

Dhaka, Bangladesh | [mknishat.kuet@gmail.com](mailto:mknishat.kuet@gmail.com) | [in mahbubulkabirnishat](#) | [mknishat](#)

## RESEARCH INTEREST

**Optimization:** Reinforcement Learning, Dynamic Game and Mechanism Design, Nonlinear Optimization.

**Smart Cities:** Emerging Mobility Systems, Multimodal Mobility, Connected and Automated Vehicles.

**Digital Healthcare:** Bioinformatics, Human-AI Teams for Robotic Surgery, Disease Diagnosis, and Monitoring.

**Supply Chain Management:** Networking, Inventory Management, Choice Models, Circular Economy.

## EDUCATION

**Bangladesh University of Engineering and Technology (BUET), Bangladesh** [🌐](#)

Master of Science in Industrial and Production Engineering

2022- 2025

CGPA: 3.92/4.00

**Khulna University of Engineering & Technology, Bangladesh** [🌐](#)

Bachelor of Science in Industrial and Production Engineering

2017 – 2022

CGPA: 3.60/4.00

**Relevant Coursework-** Data Science, Machine Learning I, Operations Scheduling and Sequencing, Operations Research, Operations and Supply Chain Management, Computer Integrated Manufacturing, Probability and Statistics, Differential Calculus, Production System Design, Robotics

## RESEARCH EXPERIENCE

### Masters Research

**Thesis:** A Machine Learning Approach for Evaluating Climate Sensitivity of Infectious Diseases in Refugee Communities

**Supervisor:** Dr. Ridwan Al Aziz [🌐](#)

#### Projects:

- Tool Wear Detection in CNC Milling: A comparative analysis of Non-parametric Machine Learning Methods [\[code\]](#)
- Conditional Diffusion Models with U-Net for Simulating Bone Growth in Pediatric Hand X-Rays [\[code\]](#)
- Enhancing Welding Defect Detection with YOLOv8 [\[code\]](#)
- Applications of Deep Learning and Machine Learning Models for Smart Cities Development: A Review

### Undergraduate Research

**Thesis:** Readiness Assessment and Barriers Identification of Adopting Industry 4.0 in Bangladeshi Electronics Industries

**Supervisor:** Dr. Rafiquzzaman [🌐](#)

#### Projects:

- Evaluating Biomass Supply and Biorefinery Location Decisions for Sustainable Bioethanol Production in Texas [\[code\]](#)
- Development of an IoT-Based Smart Wallet for Monitoring Bangladeshi Currency [\[code\]](#)

### Ongoing Project

A Variational Auto-Encoder-based digital Twin Approach for Post Total Knee Arthroplasty (TKA) Abnormalities detection in Bangladesh

## PROFESSIONAL EXPERIENCE

**PricewaterhouseCoopers (PwC), SAP Consultant, Bangladesh** [🌐](#)

Aug 2023 – present

- Provided Enterprise Resource Planning (ERP) solutions as SAP Manufacturing and Supply Chain Consultant for six major manufacturing companies, including chemical, pharmaceuticals, Textile, Home and Appliance, and the Retail industry based in Bangladesh and India.
- Automated the incident resolution process using continuous improvement techniques (KAIZEN & PDCA), resulting in an 80% reduction of reported recurring incidents, leading to a yearly cost savings of \$625k.
- Integrated machine learning models and statistical process control (SPC) into SAP QM for two pharmaceutical clients, enabling real-time quality monitoring and predictive maintenance of manufacturing systems, reducing defect rates by 15% and improving compliance with healthcare regulatory standards.

## TEACHING EXPERIENCE

### Graduate Teaching Assistant, IPE, BUET

2022

Mentored, supervised students, Proctored, graded papers, and helped the instructor with lecture preparation.

- TA for the course “IPE 301: Measurement, Instrumentation and Control”
- TA for the course “IPE 306: Production Process Sessional”
- TA for the course “IPE 402: Machine Tools Sessional”
- TA for the course “IPE 408: Ergonomics and Safety Management Sessional”
- TA for the course “CSE 296: Computer Programming Techniques Sessional”

### Guest Lecturer, IPE, National Institute of Textile Engineering & Research (NITER), Dhaka, Bangladesh

2023

Conducted both theoretical and lab classes in Outcome-based Education (OBE) format.

Courses Conducted: Modern Manufacturing Technology, CAD/ CAM, Advanced Manufacturing Process.

### Mentor & Instructor, Science Zone Academic Care, Jashore, Bangladesh

2017-2024

- Extensively tutored students for over 7 years at various academic levels, including O-level, A-level, National Curriculum high school, and first-year university students.
- Delivered instruction in High School Level Mathematics, Physics, and Programming, covering topics such as Calculus, Trigonometry, Probability and Statistics, Newtonian Mechanics, Electricity and Magnetism, and more

## RESEARCH GRANTS AWARDED

“A Machine Learning Approach for Evaluating Climate Sensitivity of Infectious Diseases in Refugee Communities” was funded by the Ministry of Science and Technology (MoST), Government of the People's Republic of Bangladesh, in collaboration with Dr. Ridwan Al Aziz. Grant amount: \$600 (2023-2024).

## TECHNICAL SKILLS

### Programming Language

Julia, C, Python, R, SQL, DAX, MATLAB, C#, C++

### Operations Research

Stochastic Programming, LP, QP, MIP, MILP, MINLP, Travelling Salesman Problem, Convex and non-convex optimization, Graph Theory, Scheduling, Game theory, Queuing Theory, Bayesian Optimization, Adaptive Sampling

### ML Techniques

Regression, Clustering, SVM, Random Forest, Bayesian Network, Ensemble learning, Uncertainty Quantification, Time-series Analysis, Predictive Modeling, MLOps, Model Tracking and Governance, Distributed systems, Gen AI, XAI

### Computer Vision

OpenCV, PyTorch, Detectron2, Vision Transformers (ViT), CLIP, Pose Estimation, Transfer Learning, Dataset Annotation (LabelImg, CVAT)

### Graph Machine Learning

GNN, GCN, GAT, GraphSAGE, DeepWalk, Knowledge Graph Embeddings (TransE, RotatE), PyG, Deep Graph Library (DGL), NetworkX, StellarGraph

### Quantum Machine Learning

QNN, VQC, QSVM, Quantum Boltzmann Machines, Quantum Feature Maps, Quantum Annealing, Qiskit ML, PennyLane, TensorFlow Quantum, Cirq, Braket SDK, IBM Quantum Lab, Rigetti Forest, Quantum Optimization (QAOA, VQE)

### Reinforcement Learning

MDP, DQN, Double DQN, Policy Gradient Methods, Deep Deterministic Policy Gradient (DDPG), Q-Learning, MARL, RLLib, TensorForce, Unity ML-Agents

### Python Library

NumPy, Pandas, Matplotlib, DataPrep, Seaborn

### Data Visualization

MS Power BI, Tableau

### ML and DL Tools

PyTorch, TensorFlow, Keras, Scikit-learn, PyCaret, H2O

### NLP Library

NLTK, SpaCy, Textblob, Gensim, Hugging Face, fastText

### Optimization

Gurobi, CPLEX, SciPy, Pymo, GLPK, GAMS, LINDO, OLP, AMPL

### Manufacturing

Industry 4.0, CNC, DNC, 3D Printing, metallurgy, and ultrasonic technologies

### Simulation Software

ANSYS, SUMO, AnyLogic, COMSOL

### Augmented Reality (AR)

Unity Hub, ARCore

## TEST SCORES

### Graduate Record Examination (GRE)

30<sup>th</sup> June, 2025

Score: 305 (Quantitative:162, Verbal:143)

### IELTS

23<sup>rd</sup> Nov, 2024

Overall Score:6.5

## HONORS AND AWARDS

**National Science and Technology (NST) Fellowship 2023** Issued by the Ministry of Science and Technology, Government of the people's republic of Bangladesh.

**Dean's Listed**-For achieving CGPA over 3.75 (3.82) in the academic session 2020-21.

**University Merit Scholarship** in four consecutive years of undergrad study.

**PMO** for SAP Implementation projects of four companies.

**Winner (1<sup>st</sup> Runner-Up)** || 2021 ISCEA PTAK PRIZE Case Competition ISCEA Bangladesh. [🌐](#)

**Winner (1<sup>st</sup> Runner-Up)** || BIHRM Innovetia 2021 Supply Chain Case Competition. [🌐](#)

## CERTIFICATIONS

• <b>Industry 4.0: How to Revolutionize your Business</b> , edX <a href="#">[Certificate]</a>	Sep 2020
• <b>Computer Vision for Data Scientists</b> , LinkedIn Learning <a href="#">[Certificate]</a>	Aug 2024
• <b>Python Fundamentals</b> , DataCamp <a href="#">[Certificate]</a>	Aug 2022
• <b>Bayesian Methods for Machine Learning</b> , Coursera	May 2023
• <b>Data Science and Supply Chain Analytics. A to Z with Python</b> , Udemy	Sep 2023
• <b>Quantum Computing Fundamentals</b> , LinkedIn Learning <a href="#">[Certificate]</a>	Nov 2025
• <b>QC101 Quantum Computing &amp; Intro to Quantum Machine Learning</b> , Udemy <a href="#">[Certificate]</a>	Oct 2025
• <b>Advanced Graph Neural Networks</b> , LinkedIn Learning <a href="#">[Certificate]</a>	Nov 2025
• <b>Intermediate SQL Queries</b> , DataCamp <a href="#">[Certificate]</a>	Sep 2020
• <b>Analyzing Business Data in SQL</b> , DataCamp <a href="#">[Certificate]</a>	Sep 2020

## INDUSTRY PROJECTS

- Development of AI-driven supply chain management and ERP Solutions in Pharmaceuticals and Cephalosporin Limited. PwC, 2023.
- Enhancement of manufacturing productivity and process optimization in healthcare, pharmaceuticals, and chemical industry, PwC, 2023.
- Led and participated in over six SAP implementation projects. PwC, 2023-2025.
- Visited over ten manufacturing plants for designing data-driven manufacturing systems, PwC, 2023-2025.

## PARTICIPATIONS

- Former Organizing Secretary, IEOM Society, KUET Student Chapter, Bangladesh
- Former Member of IEM Robotics Club (IRC), KUET, Bangladesh
- Former Team Leader of IPE Cricket Team, KUET, Bangladesh

## REFERENCES

### Dr. Ridwan Al Aziz

Assistant Professor

Department of IPE, BUET

Email: [ridwanalaziz@ipe.buet.ac.bd](mailto:ridwanalaziz@ipe.buet.ac.bd)

### Dr. Md Rafiquzzaman

Professor

Department of IPE, KUET

Email: [rafiq123@iem.kuet.ac.bd](mailto:rafiq123@iem.kuet.ac.bd)

### Md. Shohel Parvez

Assistant Professor

Department of IPE, BUET

Email: [msp.ipe@iem.kuet.ac.bd](mailto:msp.ipe@iem.kuet.ac.bd)