

# Shahzalal Khan Rahat

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## Objective

An ambitious computer science professional committed to delivering efficient, reliable, and user focused technological solutions. Skilled in programming, data analysis, and problem solving, with hands on experience across software development, machine learning, and technical projects. Looking for opportunities where I can contribute to impactful work, expand my expertise, and grow professionally.

## Skills

Machine Learning	Supervised & Unsupervised Learning, AI, Scikit-learn
Data Analysis	Data Cleaning, Feature Engineering, Exploratory Data Analysis (EDA), Statistical Analysis
Computer Vision	Image Segmentation, Feature Extraction, Clustering, OpenCV, scikit-image
Operations & Manufacturing	Process Optimization, Workforce Analytics, KPI Analysis, Lean Thinking, Operational Decision Support
Soft Skills	Communication, Presentation, Stakeholder Collaboration

## Tools

Tools & Technologies	Python, Pandas, NumPy, Scikit-learn, XGBoost, OpenCV, scikit-image, Git, LaTeX
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## Education

Ongoing	<b>B.Sc in Computer Science and Engineering</b> , BRAC University, Dhaka, Bangladesh. Last semester, Current CGPA: 3.33
2020	<b>Higher Secondary Certificate (HSC)</b> , Cantonment Public School and College, Saidpur, GPA: 5.00
2018	<b>Secondary School Certificate (SSC)</b> , Cantonment Public School and College, Saidpur, GPA: 5.00

## Projects

<b>The Travel Agency Platform</b>	Developed a ticket booking platform with hotel and weather history features, promo code support, and real-time data handling. <b>GitHub:</b> <a href="https://github.com/shahzalalrahat/The-Travel-Agency-Platform">github.com/shahzalalrahat/The-Travel-Agency-Platform</a>
<b>EYE of Blind</b>	Built a sonar-based navigation aid using Arduino and ultrasonic sensors to help visually impaired individuals detect obstacles through vibration feedback.
<b>Diabetes Prediction Model</b>	This project applies machine learning techniques to predict diabetes using clinical, demographic, and lifestyle features. Multiple models were trained and compared, identifying the Decision Tree as the most effective for early risk detection.

## Positions of Responsibility

General Member Robotics Club of BRAC University (ROBU), IT Department

## Certifications & Achievements

- 2017 Participant in National High School Programming.
- 2022 Completed Basics Of Robotics [BOR] From BRAC University.
- 2025 CVIS Training on Development of ML/DL Models by BRACu CVIS lab.
- 2025 Cleaning Data in Python. [Datacamp]
- 2025 Feature Engineering for Machine Learning in Python. [Datacamp]
- 2025 Supervised Learning with scikit-learn. [Datacamp]
- 2025 Supply Chain Analytics in Python. [Datacamp]

## Research

**Publications [Under Review]** SEWING: An Interpretable Ensemble ML Framework for Sewing Operators' Wage Increments Prediction in the Garment Industry. Developed an interpretable ML framework analyzing 14 operational KPIs across 4 garment factories, achieving  $R^2$  up to 0.99 to support data-driven wage and workforce decisions and improve operational efficiency in RMG production environments.

**Thesis [Ongoing]** Unsupervised Medical Image Segmentation Using Torque Clustering: Developing an unsupervised pipeline to segment renal lesions (stones and tumors) using clustering as the core mechanism, avoiding supervised training labels.

**Research [Ongoing]** High-Fidelity Turbulence Modeling: Enhancing Accuracy through PINN-Driven AI: physics-informed learning pipelines integrating PINNs with CFD solvers to study turbulence closures and solver-aware training.

## Hobbies

Motorcycling, Cooking, watching tech reviews, watching and playing Cricket, Photography.  
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## References

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**Research Supervisor** **Dr.Md. Sazzadur Rahman**  
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