FAHIM FAISAL RAUNAQ

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Fahim Faisal Raunaq — Portfolio

RESEARCH FOCUS

Data-driven safety & decision analytics in **socio-technical systems**, with a focus on **human–technology interfaces** utilizing

- Decision Analysis
- Supply-Chain & Operations Analytics
- Optimization
- Machine Learning
- Operations Research
- Data Science

EDUCATION

M.Sc., Industrial & Production Engineering   *Jun 2023–Present*
Bangladesh University of Engineering & Technology (BUET)
B.Sc., Industrial & Production Engineering   *Feb 2017–May 2023*
Bangladesh University of Engineering & Technology (BUET)

PUBLICATIONS & MANUSCRIPTS

Published

- **Raunaq, F. F.**, Islam, S., Anam, M. Z., & Bari, A. B. M. M. (2025). Assessing the challenges to digital technology adoption in the healthcare sector: Implications for sustainability in emerging economies. *Informatics and Health*, 2, 194–209. https://doi.org/10.1016/j.infoh.2025.09.001.

Under Review

- Karmaker, C. L., **Raunaq, F. F.**, Aziz, R. A., Dip, M. A., & Kaiser, A. *A Data-Driven Exploration of Temporal Patterns and Lifecycle Dynamics in User Activity: The Bangladeshi Online Rumors Environment.* **ACM Transactions on Computer Systems (TOCS).**
- Kaiyum, A., Mahbub, N., **Raunaq, F. F.**, & Ali, S. M. *A Data-Driven Approach to Construction Accident Prevention in Developing Countries: Insights from Bangladesh.* **Engineering Applications of Artificial Intelligence.**
- Khan, M. R., Aziz, R. A., Karmaker, C. L., **Raunaq, F. F.**, & Agarwal, P. *A Data-Driven Approach to Stance Detection Combining Topic Modelling and BanglaBERT: A Case Study in Social Media Rumors.* **Language Resources and Evaluation.**
- **Raunaq, F. F.**, Mahbub, N., Kaiyum, A., Hasanat-e-Rabbi, S., & Ali, S. M**.** *Decoding Mode-Specific Crash Dynamics in Work Zones through Machine Learning: Uncovering Spatial–Temporal Patterns for Policy-Oriented Interventions.* **IATSS Research.**

In Preparation

- **Raunaq, F. F.**, Mahbub, N. A Gold-Standard Bengali UGC Corpus for Translation-Agnostic Sentiment Analysis. (***M.Sc. Thesis)***
- **Raunaq, F. F.**, Aziz, R. A. Efficient Hyperparameter Optimization of Topic Models: A Taguchi–CRITIC MCDM framework with LDA and BERTopic. (*Project*)

RESEARCH EXPERIENCE

M.Sc. Thesis   **Supervisor: Dr. Nafisa Mahbub | In progress**
Developing a Decision Support System for Optimized Translation Agnostic Sentiment Analysis of Bangla Social Media Texts

- Built a gold-standard benchmark to test whether sentiment survives translation by explicitly linking MT quality (BLEU/chrF/SAM/COMET) to downstream macro-F1/accuracy.
- Stress-tested English pipelines under MT noise with two principled tweaks—protected stopword lists and simple negation marking—and audited failure modes via phenomenon-tagged slices (negation, intensifiers, idioms, honorifics).
- Ran translation-free baselines (BanglaBERT, Bengali VADER) on the same gold labels; validated the "comment-as-a-unit" assumption with sentence-level ablations and McNemar tests; expect protected-stopwords+negation to stabilize English pipelines while Bangla stopword removal offers no lift.

Undergraduate Thesis   **Supervisor: Dr. Nafisa Mahbub | May 2023**
An Unsupervised Machine Learning Approach to Unfold Online Toxicity Pattern: A Look at the Bangladeshi Community

- Built an analysis-grade Bangla toxicity corpus (**Approx. 18k comments**) that preserves context—reactions, timestamps, gender and location—so patterns reflect community behavior, not just word counts.
- Applied K-Prototypes on mixed features to reveal a "slow-burn" toxicity cluster (longest post to comment delay) and Dhaka-centered, male-skewed participation missed by standard NLP.
- Contrasted human-coded signals with BanglaBERT, uncovering "Haha/Like" gravity around toxic threads and isolating social response vs. model bias—pivoting my focus to low-resource safety tooling.

TEACHING & MENTORSHIP
Lecturer (Adjunct), Asian University of Bangladesh (AUB), Bangladesh   *Sep 2024–Jan 2025*
  Courses: *C Programming & Algorithm Design*
  Delivered lectures and labs; designed assessments; emphasized clarity, reproducibility, and code quality.
Coach → Senior Coach, X- Culture (Remote)   **Spring *2020–Fall 2021***
  Supported and mentored global virtual consulting teams across 40+ countries, guiding project planning, cross-cultural coordination, conflict resolution, and client-focused deliverables. Contributed to program administration, new-coach onboarding, and evaluation of team performance in large-scale, multi-agent virtual collaboration environments.

INDUSTRY EXPERIENCE
Supply Chain & Procurement Executive, Blue Bay Bangladesh Ltd., Dhaka   *Feb 2025–Aug 2025*
  Coordinated supplier communication, delivery tracking, and quality checks while analyzing material specs and vendor performance to support accurate documentation, compliant procurement, and on-time delivery
Operations Support Intern, MEKANICC Software Solutions, Dhaka   *May 2023–Sep 2024*
  Supported operational workflows, documentation, and task tracking while coordinating with clients and internal teams, maintaining planning logs and checklists, and contributing to PRD development, feature roadmaps, and wireframes to streamline cross-department workflow and project execution.
Industrial Trainee, Berger Paints Bangladesh Ltd., Dhaka   *Apr 2022–May 2022*
  Mapped manufacturing flows; contributed to warehouse layout and storage; developed a SolidWorks automation concept to reduce downtime in mixing machine; assisted QC implementation.

ACADEMIC PROJECTS
- **Paddle-Powered Water Purifier** *(Product Design II; Industrial & Marketing Management)*
  Conceived and led a human-powered purifier for low-resource communities (aligned with **SDG-6**).
    o Requirements capture, concept generation, and design-for-constraints analysis.
    o Full CAD and bill-of-materials with cost sheet; **QFD** to translate user needs into specs.
    o Go-to-market outline and **lean business model** tailored to **urban informal settlements**.
- **X-Culture Global Virtual Team — Market Expansion Project** *(Certificate)*
  Collaborated across **6 countries / 4 time zones** to deliver a client-ready expansion plan for **University of North Carolina Greensboro** (UNCG).
    o Market analysis and sizing, operations ramp-up design, staged implementation roadmap.
    o Financial assumptions, risk register, and execution milestones for cross-border rollout.
    o *Focus:* Market entry strategy, operations planning, implementation.
- **Geneva-Wheel Liquid Filling Machine** *(Product Design I)*
  Semi-automated filling system using a Geneva mechanism.
    o Mechanism synthesis, station timing/throughput calculations; tolerance-aware 3D assembly.
- **F1 Race Car (Ferrari SF90) — Parametric CAD Model** *(Course Project)*
  Detailed chassis/bodywork model with multi-part assemblies.
    o Surface + solid modeling; mates and drafting for 2D/3D deliverables using SOLIDWORKS.
- **PlayStation 5 Enclosure — Reverse Engineering** *(CATIA Exercise)*
  Industry-style modeling of a complex consumer-electronics enclosure.
    o Multibody surfacing, part-to-assembly workflows, manufacturing drawings using CATIA V5.

SKILLS & TOOLS
- **Methods:** Machine Learning, Optimization, Decision Analysis, Operations Research.
- **Computing:** Python, MATLAB.
- **CAD/Eng.:** SOLIDWORKS; CATIA; AutoCAD, ArcGIS
- **Design/Vis.**: Figma, Adobe XD, Adobe Illustrator

RELEVANT COURSEWORK
- Calculus, Matrix & LA
- Numerical Analysis
- Machine Learning
- Ergonomics & Safety
- Probability & Statistics
- Operations Research
- Quality Engineering
- Decision Analysis
- Differential Equations & Laplace
- Project & Environment Management
- Supply Chain Management
- Industrial & Business Management

CERTIFICATIONS, AWARDS & ACHIEVEMENTS
- **ISCEA Certified Supply Chain Analyst (CSCA™)**.
- **United Nations & World Bank Road Safety Champion** — 1st Runners-up (2020).
- **X-Culture Best Coach Award** (2020).
- Awarded as one of the top 40 X-Culture students.
- **AEMC-2019 Champion**.
- KUET IPE Fest 2018 (Case Solving & Poster) **Champion**
- **Robolution-2018 (MIST) 1st Runners-up**.

CONFERENCES, WORKSHOPS & SESSIONS
- X-Culture Global Symposium (Academy of **International Business-Southeast Chapter Annual Conference**) participant (2020)
- Internship Bootcamp, **Microsoft – Bangladesh** (2019)
- Host/Coordinator, "Corporate Views with Kamran Bakr (Non-Executive Director, Robi Axiata; former Chairman & MD, Unilever Bangladesh)" executive talk series.

ACADEMIC SERVICE (PEER REVIEW)
- *Ad hoc Reviewer*, **International Journal of Information Technology & Decision Making (IJITDM)**, 2025. (1 manuscript)

SERVICE & LEADERSHIP
- **Campus Envoy, Edward M. Kennedy (EMK) Center (Flagship American Space in Bangladesh)**
  Helped students navigate cultural and environmental differences through open dialogue, informed action, artistic expression, and personal & professional development.
- **Volunteer, Songjog Foundation [US-based 501(c)(3) Nonprofit]**
  Contributed to a global non-profit focused on education, healthcare, and disaster relief as part of their volunteer team.
- **Co-Chair, X-Culture Best Report Selection (2020)**
  Judged top reports among 5,000+ MBA/business students from 140+ universities (40 countries).
- **Event Manager, BUET Career Club — Study Tour**
  Organized a university-approved study tour for **38 students**: negotiated transport and venue permissions, coordinated schedules with host organizations, and delivered a safety/risk plan.
- **Vice Representative, Industrial & Production Engineering Festival, BUET**
  Co-led department festival operations including event scheduling, logistics, volunteer coordination, sponsor and campus stakeholder communication, and production of timelines and SOPs to ensure timely execution across sessions.