

Tonmoy Sarkar

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EDUCATION

Rajshahi University of Engineering & Technology

2024 – Ongoing

M.Sc. in Computer Science and Engineering

Courses:

- CSE 6301 - Advanced Artificial Intelligence
- CSE 6501 - Advanced Digital Image Processing

Varendra University

2018 – 2022

B.Sc. in Computer Science and Engineering — CGPA: 3.98/4.00

WORK EXPERIENCE

Programming Hero

Aug 2024 – Present

Senior Visualizer

Remote

Programming Hero is an Ed-Tech company that focuses on training and placing highly skilled programmers. More than 4,600+ students from Programming Hero are working worldwide.

- Collaborated with R&D team for product research, explored [MediaPipe](#), and also created a successful brand guideline for our new product [Zenyora \(Wellness & Productivity Coach\)](#)
- Led data and UI/UX visualization; managed a team of five visualizers to ensure quality outputs
- Researched and analyzed UX, implemented futuristic design system, resulting in 25% increase in conversion rate

Varendra University

Mar 2023 – Jul 2024

Lecturer, Department of Computer Science and Engineering

Full-time

- Actively involved in mentoring undergraduate students in their academics and thesis
- Contributed to course curriculum design and development
- Provided technical and promotional support for the [UCICS \(Undergraduate Conference on Intelligent Computing and Systems\)](#) Conference and received an award from the honorable Vice Chancellor
- **Courses taken:**
 - CSE 414 - Artificial Intelligence Lab
 - CSE 236 - Software Development Lab II
 - CSE 221 - Software Engineering
 - CSE 311 - Operating System and System Programming
 - CSE 1102 - Structured Programming Language Lab
 - CSE 421/422 - Computer Graphics/Lab

Programming Hero

Aug 2022 – Mar 2023

Visualizer

Remote

- Led design team to create high-quality, consistent brand visuals across platforms
- Collaborated with marketing, content, and dev teams for compelling visual narratives
- Designed marketing assets and user centric visual content to boost engagement
- Set brand guidelines, refining designs using feedback and performance data

Shikho Technologies Bangladesh Ltd.

Jan 2022 – Jul 2022

Visual Designer

Remote

Shikho is a pioneering Bangladeshi Ed-Tech startup on a mission to revolutionize the way Bangladesh learns today and democratize access to a high-quality education.

- Designed creative advertisements for social channels and print materials for offline marketing promotion
- Helped the product team in designing iconography, banners and thumbnails for “Shikho Skills” Web UI

Bohubrihi Technologies Ltd.

Dec 2020 – Dec 2021

Visual Designer

Remote

Bohubrihi is an E-learning company that offers superior online courses and professional training to help students and professionals master new skills.

- Contributed to visual direction and designed advertisements for several campaigns
- Collaborated with the product team to improve the usability of the website's UI elements

RESEARCH INTERESTS

- Topic Modeling, Semantic Analysis, RAG
- AI in Healthcare
- Computer Vision
- Sentiment Analysis with LLMs
- Human-Computer Interaction (HCI)
- User Experience (UX) Design
- Computational Linguistics
- Computational Imaging
- Accessible User Interfaces (UI)

RESEARCH WORKS

LLM-Enhanced Topic Modeling of Twitter Data: A Case Study of Elon Musk [🔗](#)*[Ongoing]* 2025

- Used a Kaggle dataset of Elon Musk's tweets [2010-2025] for analysis through text cleaning and preprocessing
- Utilized the BERTopic model with the LLaMA 3 LLM to extract and categorize key topics present in the tweet corpus but the challenge was filtering the trendy topics
- Conducted topic analysis to identify prevalent themes and trends in Elon Musk's Twitter communications

Knowledge Retrieval for Software Engineering Topics [🔗](#)*[Ongoing]* 2025

- Utilized the DevGPT dataset and custom chat prompts to optimize semantic retrieval
- Experimented with the Gemma-7B-it model to explore techniques for semantic retrieval and content summarization in the software engineering domain
- Analyzed various querying techniques using prompt template to enhance retrieval quality, and identified the most frequently asked topics by software engineers when seeking assistance from ChatGPT
- Employed the `bart-large-mnli` model to select the top 40 most frequent topics using a zero-shot classification approach

Evaluating User Perceptions to Identify User-Friendly Mobile Financial Apps in Bangladesh: A Case Study *[In Review]* [\[Manuscript\]](#) [🔗](#) 2024

- Co-authored the research and the manuscript is submitted to the Journal of Social Computing
- Analyzed MFSs (Bkash, Nagad, Rocket) based on UI, color harmony, and functionality using bivariate and MLR analysis
- **Key findings:** Bkash has the simplest registration process; Rocket's UI is the most complex; Nagad offers consistent button distribution

Fake Hotel Review Detection using BERT-Based Supervised Classification 2024

- Implemented a supervised machine learning pipeline using BERT to classify deceptive hotel reviews based on sentiment and authenticity
- Preprocessed text data from multiple labeled sources including TripAdvisor and Mechanical Turk datasets and used data augmentation technique using Llama 3 LLM model to increase the volume of the dataset
- Fine-tuned pre-trained BERT models for binary classification (truthful vs deceptive) using PyTorch and Hugging Face Transformers

Deep Learning for Galaxy Morphology Classification with Vision Transformer (ViT) [🔗](#) 2024

- Utilized the Galaxy10 DECaLS dataset to classify galaxy morphology into 10 distinct categories
- Implemented data preprocessing that included image composition, cropping, and normalization techniques to optimize image data for model training
- Fine-tuned the pre-trained `vit-base-patch16-224` ViT model using image transformations and custom training loops
- Evaluated the model's performance using accuracy metrics to assess the effectiveness of galaxy classification

An Electronic Postal System: A Third-Layer Bitcoin Application for Data Sending System Made Over the Bitcoin Network [🔗](#) *[IEEE CS BDC SS]* 2023

- Satoshi Nakamoto's Bitcoin revolutionized digital transfers in 2009, but Bitcoin's slowness and cost led to the development of the Lightning Network. This research paper explores a third-layer solution that facilitates efficient and large-scale data transfer within Bitcoin, potentially extending to global networks and satellite communications.

THESES AND PROJECTS

ScholarSense - Gen AI Intensive Course Capstone 2025Q1 *[Project]* [🔗](#) 2025

For the 2025Q1 Google Gen AI Intensive Course Capstone, my teammate and I created ScholarSense, an AI tool for academia. It offers paper summarization, flashcard creation, insight extraction, answer grading, and RAG-based query responses using the Google Generative AI SDK and vector database integration. **My Presentation:** [ScholarSense — YouTube](#)

User Experience (UX) Strategies to Improve Usability of Digital Products *[Thesis]* 2022

The aim of the thesis is to analyze and present UX strategies that can enhance the overall user experience of digital products and make them more usable for users. The study focuses on:

- Finding bad UX in existing products
- Importance of usability in digital products
- Applying visual principles to products to improve their functionality, ease of use, and overall satisfaction for the end-users

COVID Tracker — Android Application *[Project]* [🔗](#) 2021

The purpose of this "COVID Tracker" application is to provide real-time information and updates on the spread of the COVID-19 pandemic.

- Used disease.sh API to track the worldwide COVID data including total cases, total deaths, recovered, active cases etc.
- Users can also search the country wise COVID data
- **Language:** Dart, **UI Toolkit:** Flutter (Framework)

TRAINING

Women Empowerment focused bootcamp on ‘*Practical Graphic Design*’

2024

Mentored a 5-days long Women Empowerment Bootcamp on Practical Graphic Design, organized by [American Corner Rajshahi](#).

- Guided participants in real-world design projects, enhancing their practical skills and industry readiness
- Provided hands-on training in Adobe Photoshop and Illustrator to aspiring female designers
- Took session on design principles, branding, and user-centered aesthetics

SKILLS

- **Programming Languages:** Python, PHP, C, C++, JAVA, JavaScript, SQL, MATLAB
- **Frameworks/Libraries:** Scikit-learn, NLTK, SpaCy, LangChain, BERTopic, Sentence Transformers, Gensim, TensorFlow, Keras, Flutter
- **Prompt Engineering:** MidJourney, Grok, Deepseek, Kimi, ChatGPT, DALL-E, RunwayML, Stable Diffusion, Claude, Perplexity, Adobe Firefly
- **Office Suite:** Google Office Suite (Docs, Sheets, and Slides), Microsoft Office (Word, Excel, and PowerPoint)
- **Multimedia:** Adobe Photoshop, Adobe Illustrator, Adobe Lightroom, Adobe InDesign, Capcut, Canva, Figma
- **Soft Skills:** Team Collaboration, Leadership, Writing, Public Speaking, Time Management, Problem Solving, Creative Thinking