MD. ZUBAYER HOSSAIN PATOWARI

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AI & MACHINE LEARNING ENGINEER

Passionate AI Engineer with hands-on experience in developing innovative AI solutions across healthcare, gaming, and automation. Skilled in natural language processing, machine learning, computer vision and generative AI, with a focus on real-world problem-solving.

WORK EXPERIENCE

AI & Automation Developer
April 2025 - Present

Dhaka Post | Dhaka, Bangladesh
- Designed and developed BanglaShorts, an AI-powered micro-news platform for Dhaka Post, aimed at summarizing Bangladeshi news articles into concise 59-word stories for rapid reader engagement.
- Built a web scraping engine to extract articles from top Bangladeshi news portals and implemented NLP models (BanglaBERT, mT5) to generate human-like short summaries.
- Developed a duplicate content detection system using vector similarity techniques (Sentence Transformers + cosine similarity) to filter and merge repeated news stories.
- Automated news image processing by applying extracted media to five unique design templates using Python's Pillow and OpenCV libraries.
- Integrated with the Facebook & Instagram Graph APIs to automate social media posts, supporting dynamic image templates, captions, and scheduled publishing, removing the need for manual posting.
- Contributed to Dhaka Post's goal of expanding social reach through AI-powered content delivery and modern digital publishing tools.

AI Developer
June 2024 - April 2025

Rootsuptech
- Spearheaded the development of multilingual generative LLM chatbot models, ensuring inclusivity and accuracy in diverse linguistic contexts.
- Designed and implemented ChatGPT-like conversational history and context retention for AI interactions.
- Optimized data storage pipelines for enhanced model retraining and versioning.

Lead Chatbot Developer
April 2024 - December 2024

IEM Unit, Directorate General of Family Planning (DGFP)
- Designed BanglaGPT, a generative AI-powered chatbot, under USAID's Breakthrough ACTION project to assist call center agents in addressing health-related queries.
- Implemented robust NLP models tailored for Bangla to improve accessibility and effectiveness

Web Developer
April 2022 - December 2023

Griherbazar.com
- Enhanced website performance by resolving complex bugs and optimizing backend systems.
- Conducted in-depth customer behavior analysis to integrate personalized AI-driven recommendations.
- Customer Behavior Analysis.

PROJECT

BanglaShorts – AI-Powered Bangla News Summarization & Auto-Social Publishing Platform

Tech Stack: Python, Hugging Face Transformers, Scikit-learn, BeautifulSoup, Sentence Transformers, BanglaBERT, Flask, CRON, OpenCV, Pillow, Facebook Graph API, Instagram API
Key Highlights:
- Problem: Bangladeshi audiences face news fatigue due to lengthy articles and redundant coverage across media outlets.
- Solution: Developed an AI-driven platform that scrapes articles from major news portals and summarizes them into exactly 59 words using fine-tuned Bangla NLP models (BanglaBERT + Sentence Transformers).
- Duplicate Filtering: Tackled repetitive news by implementing a content similarity detector using cosine similarity and sentence embeddings.
- Visual Content Automation: Created a dynamic image design pipeline that overlays news images on five rotating templates using OpenCV and Pillow.
- Automated Publishing: Built an end-to-end social media scheduler using Facebook and Instagram APIs, automating daily news posts without human intervention.
- Impact: Reduced average news reading time by 70% and increased audience engagement by publishing visually optimized news tailored for social platforms.

Telco Poster Detection – YOLOv12 Object Recognition System

Tech Stack: Python, YOLOv12, OpenCV
- Problem: Detecting unauthorized telco company posters in public places required manual inspection.
- Solution: Trained a YOLOv12 model to detect and localize posters in real time using camera feeds.
- Impact: Automated visual surveillance tasks, reducing monitoring workload and improving detection efficiency.

MedExtract AI – Intelligent Medical Document Processing System
Tech Stack: Python, FastAPI, spaCy, Transformers (BioBERT), PyTorch, React, PostgreSQL, Docker
Key Highlights:
- Problem: Healthcare professionals waste hours manually extracting critical information from unstructured medical documents and clinical notes.
- Solution: Built an AI system that automatically extracts medical entities (diagnoses, medications, vitals, treatment plans) from diverse document formats including PDFs, DICOM, and handwritten notes.
- AI Innovation: Deployed BioBERT with custom NER models for medical entity recognition and temporal relationship extraction to maintain clinical context.
- Compliance: Engineered HIPAA-compliant infrastructure with encryption, audit logging, and patient data de-identification.
- Impact: Reduced medical data processing time by 85% and enabled scalable medical research for hospitals and pharmaceutical companies.

AI WhatsApp Chatbot – Scalable Customer Support Bot with Context-Aware Intelligence
Tech Stack: NestJS, WhatsApp Cloud API, GROQ, Redis
Key Highlights:
- Problem: Businesses needed scalable, real-time customer support on WhatsApp without hiring large support teams.
- Solution: Built a production-ready chatbot that automates business conversations using GROQ's LLM and WhatsApp Cloud API.
- Context Management: Used Redis to implement session-based memory, enabling contextually relevant, personalized replies across multi-turn conversations.
- Scalable Architecture: Built on NestJS, enabling modular development and easy scaling for high-traffic enterprise use.
- Impact: Reduced operational costs by 40% for early adopters in healthcare and retail sectors and significantly improved customer satisfaction scores through faster response times.

Sukhi-Poribar AI Chatbot – NLP-Based Health Support for Call Centers
Tech Stack: Python, TensorFlow, Flask, NLTK
- Problem: Health call center agents struggled to deliver fast, accurate answers to common family planning queries due to lack of centralized knowledge access.
- Solution: Developed a conversational AI chatbot trained on healthcare datasets to assist call center agents in providing real-time, accurate support in Bangla.
- Impact: Reduced agent response time and improved the consistency of information delivered to the public under DGFP's IEM Unit and USAID's Breakthrough ACTION program.

SKILLS & COMPETENCIES

- **Programming Languages:** Python, C, C++, JavaScript, SQL
- **Web Development:** React.js, FlaskAPI, FastAPI, Node.js, HTML5, CSS3
- **AI & Machine Learning:** Natural Language Processing (NLP), Computer Vision, Generative AI, Large Language Models (LLMs), Deep Learning
- **Frameworks & Libraries:** TensorFlow, OpenCV, Scikit-learn, Pandas, NumPy, Keras, Hugging Face, Torch, Lang chain, OpenNN, PyBrain, NLTK, SpaCy, YOLO
- **App Development:** React native, Capacitor
- **Databases:** MongoDB, MySQL
- **Cloud & DevOps:** AWS, Docker, Git, GitHub
- **Tools & Platforms:** Jupyter Notebook, Unity, Google Colab, VS Code
- **Languages:** English (Fluent), Bangla (Native)

COURSES / CERTIFICATIONS

AI Engineer for Data Scientists Associate   **06/2025**
DataCamp

Introduction to Generative AI   **10/2024**
Google

Introduction to Large Language Models   **11/2023**
Google

Python Essentials 1&2   **10/2024**
Cisco