# Orbin Ahmed Acanto

GitHub Portfolio
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Queens • New York • USA

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## Career Objective

As an enthusiastic learner eager to deepen my expertise in machine learning and software development. I am passionate about driving innovative solutions in healthcare technology. Committed to bridging advanced AI techniques with medical research, AI-driven solutions that address real-world challenges. I aim to learn industry best practices, collaborate on impactful projects and develop scalable technologies that enhance healthcare and other domains through data-driven decision-making.

## TECHNICAL SKILLS

Programming Language: React JS, Python, JavaScript, jQuery, TypeScript, SQL, Shell scripting
Frameworks: Next JS, Django, PyTorch, TensorFlow, Frappe, Bootstrap, Tailwind
Technical Writing tools: Latex, Typora
Developer Tools: Git, AWS, Railway, Docker, Cog
Operating System: Windows, Ubuntu.
Python Libraries: NumPy, OpenCV, Matplotlib, Pandas, PyTorch, Transformers, OpenSlide
Software: PyCharm, VS Code, Cisco Packet Tracer, Sublime Text, Arduino IDE.

## WORK EXPERIENCE

**Stony Brook University** Nov 2024 – Present
Senior Research Aide New York, USA
*Tasks-*

- Working on enhancing DNABERT, a transformer-based model, by integrating multi-modality approaches to improve DNA sequence analysis.
- Collaborating with Dr. Davuluri's lab to advance DNA embedding generation techniques for advanced computational genomics.
- Developing computational pipelines for species classification, motif detection, and gene regulatory mechanism analysis.

**Ideal Home UAE** April 2024 – Aug 2024

Data Scientist Abu Dhabi, UAE

*Tasks-*

- Leveraged transformer-based Stable Diffusion and YOLOv8 models for object detection, segmentation and automated design recommendations to enable AI-driven insights and decision-making.
- Developed AI solutions to generate 3D furniture models and a 3D villa design system, showcased on www.idealhomeuae.com, enhancing automated design processes.
- Designed and built user-friendly deep learning image processing applications with Next.js and Django, integrating data visualization and AI model outputs, while utilizing PostgreSQL for structured data storage and persistent storage for managing media and blob data.
- Utilized Railway for managing and scaling web application infrastructure, along with Docker for deploying AI-based models on the cloud to ensure seamless deployment and performance.

**Increments Inc** July 2022 – May 2023

Software Engineer I Dhaka, Bangladesh

*Tasks-*

- Analyzed user requirements and created Software Requirement Specifications (SRS) for new projects, utilizing UML-based methods like Use Cases and Activity Diagrams.
- Developed reusable components and responsive websites using React.js, integrated REST APIs, and designed scalable backends with Django.
- Contributed to **FindMyWorks** (a job searching and portfolio builder platform) and **MakeMyMenu.io** (a restaurant menu digitization software).
- Wrote well-documented code for ERP software in **ERPNext**, deployed applications to live servers on AWS EC2, RDS and S3, also conducted manual testing to validate functionality.

**Techynaf** Aug 2021 – Nov 2021

Software intern Dhaka, Bangladesh

*Tasks-*

- Collaborated with the tech lead to develop and test frontend features, identified and resolved bugs and improved existing code within the Laravel framework.
- Contributed to **Shapla** (https://shapla.io/), the first Bengali ERP system, by documenting and addressing technical issues to ensure seamless functionality.

## EDUCATION

**Stony Brook University** New York, USA

*Master of Science in Biomedical Informatics* Aug 2024 – Present

**Lab Experience:**

- Dr. Davuluri's Lab: Leveraged the BERT model for DNA embedding generation, enabling tasks such as species classification, motif detection, gene regulatory mechanism analysis and cluster species based on gene embedding data.
- Dr. Chen's Lab: Utilized advanced models like CellViT and HoVer-Net for pathological image analysis, applying color normalization techniques for accurate cell classification and tumor segmentation. Conducted spatial analysis to explore tumor microenvironments and their relationship with cellular structures, enhancing diagnostic precision in medical imaging.

**BRAC University** Dhaka, Bangladesh

*Bachelor of Science in Computer Science & Engineering* May 2022

CGPA: 3.42 out of 4

**Additional Coursework:** Cryptography & Cryptoanalysis, VLSI Design

Activities & Societies: Robotics Club of BRAC University, Adventure Club of BRAC University

## PUBLICATIONS

[1] O. A. Acanto, M. I. Drishty, A. Islam, S. Zaman, J. Ahmed and M. K. Rhaman, "A hybrid approach to determine patient's critical situation using deep learning algorithm," 2022 2nd International Conference on Computing and Machine Intelligence (ICMI), 2022, pp. 1-5, doi: 10.1109/ICMI55296.2022.9873684

## PROJECTS

https://www.idealhomeuae.com | Next JS, Django, Python, PostgreSQL, Stable Diffusion, YoloV8

- Designed a client-facing interface showcasing company projects, services, and a visual gallery.
- Implemented web scraping for automated interior design inspiration and enriched visual content.
- Built a Django backend powering APIs for AI models that detect floor plans and create modifiable 3D dollhouse views.
- Enabled 4K rendering of 3D scenes using web GPU for high-quality visualization.

- Leveraged Stable Diffusion AI for immersive 360-degree room redesigns and interior customization.
- Developed a tool for 3D uPVC window and door customization with tailored designs.

Drug Interaction Prediction Platform | Python, Graph Neural Networks, Django, PostgreSQL

- Built a Graph Neural Network model to predict drug-drug interactions using Drug Bank datasets and drug structures.
- Developed a Django web app for users to predict interactions, view drug details (side effects, ingredients), and enhance medication safety analysis.

A Real-Time Critical Situation Detection | Python, TensorFlow, Keras, Blazepose, CNN, Pandas

- Developed a system to detect facial expressions, body posture, and patient falling sequences.
- Utilized CNN for facial expression detection and BlazePose for posture analysis.
- Achieved 67% accuracy on diverse test sets with varying scenarios and lighting conditions.

Bengali Hand Writing Character Classification | Python, TensorFlow, Keras, CNN, Pandas

- Addressed Bengali handwriting character classification with 50 simple and 120 compound characters from a dataset of 60,000+ images.
- Developed a custom 22-layer CNN for multi-class classification and used data augmentation for enhanced performance.
- Achieved 89% accuracy on a test set of 10,000 images.

In-depth Analysis of RNA Sequences in the context of mouse species | R, Bioconductor

- Used R and Bioconductor to analyze the GRCm39 genome assembly dataset, focusing on mouse gene transcriptional changes.
- Built a reusable RNA sequence pipeline for transcript quantification, PCA, gene expression, and module analysis.
- Developed interactive data visualizations and identified experimental biases in large datasets.

https://makemymenu.io | React JS, Django, PostgreSQL, JavaScript, Ajax, Bootstrap.

- A restaurant menu digitization platform allowing users to build, customize, and update menus dynamically without changing QR codes.

- Enables menu customization with items, combos, and groups while providing detailed analytics on customer interactions.
- Customers can scan QR codes to view items, combos, and promotions directly on their phones.
- Supports subscription management with multiple plan options.

Car Hub | Next JS, TypeScript, Tailwind CSS

- Discover cars from global manufacturers with filters for fuel type, year, make, and model.
- Access detailed car information with interactive 360-degree views.
- Built with Next.js App Router for smooth navigation and SEO-friendly server-side rendering.
- Features custom filters, combo boxes, and modals for an enhanced user experience.

Real-Time Face and Number Plate Recognition | Python, OpenCV, EasyOCR, Django, AWS

- Security app processes CCTV input to detect and store unknown faces and vehicle license plates in a database.
- Allows users to add names and details to unknown faces and identify known individuals and vehicles from the local database.
- Features a calendar view to track vehicles and people visiting specific CCTV areas.
- Deployed on an AWS server for scalable performance.