

# Izhar Ali

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## Technical Skills

**Languages:** Python, Java, JavaScript, SQL, R, C, C++, HTML, CSS, MATLAB  
**Technologies:** TensorFlow, PyTorch, Keras, Scikit-Learn, Docker, Kubernetes, Terraform, Flask, Django, React.js, Redis, Celery, Azure, AWS (Lambda, ECS, S3, DynamoDB, API Gateway, Cognito), Google Cloud Platform (GCP), OpenAI API, Hugging Face, Git, GitLab, GitHub Actions, GitHub Workflow, Jira, Agile Methodology  
**Databases:** MySQL, MongoDB, PostgreSQL, SQLite, Neo4j, Redis, Amazon RDS, Pinecone  
**Data Analysis & Visualization:** NumPy, Pandas, Matplotlib, Seaborn, Plotly, D3.js  
**Machine Learning & AI:** NLP, Computer Vision, Transfer Learning, Reinforcement Learning, GANs, CNNs, RNNs, Transformers, Feature Engineering, Model Deployment, A/B Testing, Experiment Tracking (MLflow, Weights & Biases)

## Experience

- ZeroEyes**  
*Data Engineering Intern*

Jun 2024 – Present  
*Conshohocken, PA (Remote)*

  - Engineered and optimized large-scale data processing systems to support real-time AI algorithms for weapons detection, increasing processing efficiency by 3%.
  - Developed a two-branch YOLOv5 model incorporating images and metadata, boosting detection accuracy to 99.8%. This involved modifying the YOLOv5 architecture, creating data processing pipelines for metadata, and performing feature engineering.
  - Implemented APIs and automated tools that reduced manual processing time by 5%, enhancing productivity and enabling real-time experiment data visualization for the team.
- Bristol Myers Squibb**  
*NLP Student Researcher*

Jul 2021 – Feb 2024  
*Remote*

  - Led an Agile NLP project to enhance scientific document readability, achieving 88-92% accuracy in acronym extraction, significantly streamlining document processing and reducing researcher workload by 20%.
  - Developed a custom-hybrid NLP solution combining regular expressions and LLMs, achieving over 90% precision in acronym-expansion mapping, reducing average reading time of scientific papers by 15%.
  - Created a Flask-based user interface for internal server deployment, improving access to engineering tools and operational insights, boosting efficiency and productivity.
- Bristol Myers Squibb**  
*Software Development Intern*

May 2023 – Aug 2023  
*Princeton, NJ*

  - Enhanced and debugged Flask-LIMS, a real-time laboratory information management system, resulting in a 2% increase in system stability and performance.
  - Implemented MongoDB, Celery, Redis, and Docker to improve scalability, task management, and application containerization to reduce system response times.
  - Adopted Agile methodologies, CI/CD practices, and DevOps tools with GitLab, accelerating release cycles and improving overall software development efficiency.

## Publications

- Automated Extraction of Acronym-Expansion Pairs in Scientific Literature**  
*Published at CCSCNE*

2023  
*Ithaca College, NY*

  - Demonstrated a hybrid approach using regular expressions and large language models, enhancing precision in scientific text analysis.
  - Developed a methodology that combines rule-based and AI-driven techniques, significantly improving acronym extraction in computational linguistics research.
  - Showcased practical AI applications in academic research, influencing advancements in automated text and document processing within the scientific community.

## Projects

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### **Ping: Social Interaction and Networking Platform** | *AWS ECS, Lambda, API Gateway, Cognito, DynamoDB, S3, Terraform, Docker*

- System designed and implemented "Ping," enhancing user connectivity via dynamic card generation and event scheduling.
- Deployed microservices using AWS ECS and Fargate, optimizing scalability and management.
- Integrated Stripe and AWS services for secure transactions and real-time notifications.

### **Nebula Tech** | *AWS, Azure, Docker, Terraform, JavaScript, Python, DynamoDB, MongoDB, Xata*

- Architected, developed, and deployed innovative cloud-based solutions for startups, enhancing user interaction and operational efficiency.
- Specialized in leveraging cutting-edge technologies to drive projects from conception to production, including infrastructure provisioning with Terraform.
- Implemented secure authentication and user management systems using AWS Cognito and IAM, improving data security and user experience.

### **AI Flicks: Text-to-Image Web Application** | *JavaScript, Flask, MongoDB, Hugging Face, OpenAI's DALL-E 3, Azure*

- Launched a text-to-image web application integrating diffusion models via Hugging Face API and OpenAI's DALL-E 3, enabling diverse and creative image synthesis.
- Engineered a responsive JavaScript UI and a Flask-based backend with MongoDB, optimizing user session management and real-time image processing.
- Integrated Teemill and Stripe for e-commerce capabilities on Azure, facilitating product customization and seamless transactions.

### **FusionX: Neural Style Transfer** | *PyTorch, VGG-19, Kaggle "Painter by Numbers" dataset, Tesla V100 GPU, Shader programming*

- Developed a neural style transfer application using transfer learning with VGG-19 and custom loss functions to combine the style of one image with the content of another.
- Utilized PyTorch for model development, training on a subset of the Kaggle "Painter by Numbers" dataset, improving model performance and quality of style transfers.
- Added real-time image editing capabilities using shader programming and GPU-accelerated convolution filters for in-browser adjustments.

### **MatchMatic: AI-Powered Dating Chatbot and Matchmaking Service** | *OpenAI Embeddings, LangChain, Pinecone, Gradio*

- Co-founded and developed the core algorithm for an AI-driven matchmaking service using OpenAI Embeddings and LangChain, enhancing match accuracy and user satisfaction.
- Implemented vector database integration with Pinecone for efficient profile analytics, optimizing the matchmaking experience.
- Designed a Gradio and Bootstrap-based UI supporting text, image, and voice inputs for an interactive and accessible user experience.

### **Open Source Development** | *Python, R, Jupyter notebooks, Google Translation API*

- Led a comprehensive open-source repository in numerical optimization and multivariate data analysis, implementing advanced statistical methods in Python and R.
- Contributed to over 15 deep learning projects, including clustering, classifiers, recommendation systems, image recognition, and machine translation.
- Published "csv-trans," a Python package for CSV file translation on PyPI, leveraging Google's Translation API, and achieving over 10,000 downloads.

## Education

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### **Rowan University**

*Bachelor of Science in Computer Science & Mathematics (CGPA: 3.985 / 4.00)*

Graduated May 2024

Glassboro, NJ

- **Concentrations:** Machine Learning, Statistics, Honors
- **Honors and Awards:** Math Medallion, Outstanding Senior, Honors College, President's List, International Merit Scholarship, Brown & Gold Scholarship
- **Relevant Coursework:** Advanced Models of Deep Learning, Computer Vision, Data Mining, Applied Multivariate Data Analysis, Concepts in Statistical Data Analysis, Mathematical Statistics, Probability & Random Variables, Data Structures & Algorithms, Design & Analysis of Algorithms, Database Systems, Software Engineering, Operating Systems, Programming Languages, Computer Organization, Operations Research, Computer Lab Techniques