

Lochan Basyal
Machine Learning Engineer | Data Scientist

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PROFESSIONAL SUMMARY

- 5+ years of professional experience in the Machine Learning domain working on statistical analysis, data mining, deep learning, computer vision, natural language processing, and Large Language Models (LLMs)
- Experience in developing Machine Learning solutions, i.e., text summarizations, sentiment analysis, recommendation systems, forecasting models, fraud detection models, object detection, and segmentation to address various business problems
- Led the analytics and machine learning team to develop solutions for business problems in computer vision and crowd-counting models
- Developed RAG-based conversational chatbot to explore PDF documentation with Meta's Llama 2 7b chat model from Hugging Face, integrating with Llama Index's query engine

EXPERIENCE

Data Scientist

Infosys Ltd.

Sep 2024 – Present

- Engineered a computer vision-based frictionless shopping experience at Walmart Inc., leveraging action recognition, pose estimation, and item detection/tracking models
- Built and deployed robust Kafka streaming pipelines for diverse business use cases, integrating them with microservices and aligning with Walmart Cloud Native Platform (WCNP) infrastructure for scalable data processing
- Designed and implemented RESTful APIs for seamless interaction with Azure Cosmos DB and Blob Storage, collaborating in a cross-functional team to ensure the architecture met business goals and operational requirements

Machine Learning Engineer

MavenCode LLC, Southlake, Texas

Aug 2023 – Jul 2024

- Lead the creation of advanced object detection and segmentation models, fine-tuning YOLO pre-trained models with diverse Roboflow datasets for an exceptional 97% accuracy
- Drove the development of intricate crowd-counting models, collaborating across teams to seamlessly integrate cutting-edge computer vision solutions. Achieved a remarkable 95% accuracy rate, solidifying project success
- Designed the Machine Learning data pipeline for regular monitoring and performance evaluation of the deployed ML models
- Owned the complete MLOps lifecycle, including data monitoring, code refactoring, and the development of robust model monitoring workflows for efficient model lifecycle management
- Applied strong knowledge of data structures, algorithms, and software engineering principles to create robust AI solutions
- Conducted ongoing research to stay updated with the latest advancements in generative AI, machine learning, and deep learning techniques, identifying opportunities for integration into products and services

Graduate Student Researcher

Stevens Institute of Technology, Hoboken, New Jersey

Jan 2022 - May 2023

- Developed an end-to-end machine learning solution on GCP Vertex AI, encompassing data ingestion, model training, validation, testing, and deployment, fostering collaboration across teams, and ensuring scalability, security, and continuous improvement
- Analyzed the PatchCamelyon benchmark datasets to train the different models, including multilayer perceptron, convolution, ResNet50, InceptionV3, and ensemble, to achieve a model's performance with 95% accuracy
- Worked with big data technologies, SQL, and data science tools

Machine Learning Engineer

BigO Information Technology Pvt. Ltd. Kathmandu, Nepal

Sep 2017 – Dec 2021

- Spearheaded a recommendation system project aimed at enhancing online ordering and customer engagement in the hospitality sector, utilizing customer feedback, ratings, purchase history, and demographic data
- Conducted Exploratory Data Analysis (EDA) and data visualization using Pandas, Matplotlib, NumPy, and scikit-learn to uncover insights and patterns within available datasets
- Developed a machine learning solution that combined collaborative filtering and content-based filtering to address the identified problems and effectively resolved the cold-start issue through a hybrid approach
- Conducted model training and validation, evaluating model performance using metrics like accuracy, precision, recall, and F1-score, resulting in an impressive model accuracy of 95%
- Successfully integrated and deployed the recommendation system into the client's software infrastructure, leading to a remarkable 50% increase in sales within a single quarter, translating to a total revenue boost of \$800,000
- Participated in all phases of data mining, including data collection, data cleaning, model development, training, validation, testing, and visualization of performance metrics for model evaluation

- Demonstrated strong thought leadership by advising product and business stakeholders on the development, scaling, and deployment of machine learning solutions

TECHNICAL SKILLS

- **Programming:** Python, SQL, NumPy, Pandas, scikit-learn, TensorFlow, PyTorch
- **Cloud Platforms:** AWS, Google Cloud Platform (GCP), Azure
- **CI/CD:** Docker, K8s, Open Observe, Grafana
- **AI/ML:** Linear Regression, Logistic Regression, Decision Tree, Random Forest, XGBoost, SVM, PCA, CNN, RNN, LSTM, Transformers, LLMs, RAG, LlamaIndex, Langchain, Prompt Engineering, Agentic AI

RESEARCH

- **Basyal, L.** and Sanghvi, M., Text Summarization Using Large Language Models: A Comparative Study of MPT-7b-instruct, Falcon-7b-instruct, and OpenAI Chat-GPT Models. arXiv preprint arXiv:2310.10449.
- **Basyal, L.**, Voice Recognition Robot with Real-Time Surveillance and Automation. arXiv preprint arXiv:2312.04072.
- Rohila, V.S., Lalwani, N. and **Basyal, L.**, Histopathologic Cancer Detection. arXiv preprint arXiv:2311.07711.
- **Basyal, L.**, & Gaudel, B., Augmenting Automation: Intent-Based User Instruction Classification with Machine Learning. *arXiv preprint arXiv:2403.01242.*

AWARDS

- **KaggleX Career Development Scholarship**
Granted by Kaggle, Cohort 3 of the KaggleX mentorship program. (Aug. 2023 - Dec. 2023)
- **Provost's Master's Fellowships**
Accorded by Stevens Institute of Technology for MS in Computer Engineering. (Jan. 2022)
- **ISTE Best Student Award**
Awarded by the Indian Society for Technical Education (ISTE) for recognition of undergraduate research. (Sept. 2018)

EDUCATION

- **Master of Science in Computer Engineering, Concentration: Artificial Intelligence (AI)**
Stevens Institute of Technology
- **Bachelor of Technology in Electronics and Communication Engineering**
Punjab Technical University
- **Diploma in Electronics Engineering**
Institute of Engineering, Pashchimanchal Campus, Tribhuvan University