

**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

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## EXPERIENCE

### Associate 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

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- **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

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- **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

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- **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

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- **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