

Samundra Karki
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PROFESSIONAL EXPERIENCES

Graduate Research Assistant

ComPM Lab

August 2023– Current

- Geometric Deep Learning for Compact Representation for Computational Analysis.
 - Neural Fields in Visual Computing for 3D Geometry Reconstruction.
 - Hybrid GPU-CPU Collaboration for High Performance Computing.
 - Generative AI with Neural Field for Geometric Manipulation.
 - Octree Mesh Construction with Deep Implicit Representation for FE
 - Application Area: NERFs, 3D reconstruction, Computer Vision, Gen-AI
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- **Tech Stack:** PyTorch, C++, GPU Profiling, CUDA, Bash, Github CI/CD, Azure Batch, Finite Element Analysis for PDE

AI Fellow

FuseMachine

Jan 2023–Jan 2024

- Classical Machine Learning: Ensembles, Probabilistic Models, Clustering, Time Series, Reinforcement Learning on Standard Datasets
 - Deep Learning: Conditional GANs, Attention-based Neural Translation, Image Reconstruction with VAE, Federated Learning,
 - Deep Learning in Production: ETL, ONXX serving, Kubernetes, TorchServe, CI/CD
 - Computer Vision: YOLO, SAM, ResNet, and Vision Transformers for Detection, Localization, and Detection.
 - NLP: Movie Recommender using Word Embeddings, Keywords Extraction Using TF-IDF
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- **TechStack:** Scikit-learn, PyTorch, TensorFlow, Hugging Face, FastAPI, Kubeflow, Federated Learning, Jenkins, Travis, OpenCV, NLTK

Computational Analytics and Smart Contract Engineer

Mokshya Protocol

May 2022– Current

- Tools like Crystal Ball for Monte-Carlo analysis for Risk Management
- Power BI and Apache Spark for NFT data analysis for a product named [Wapal](#)
- Smart Contract development based on popular demand through analysis of Twitter posts
- Solana and Aptos Blockchain
- Product Development and Co-founder roles
- **Tech Stack:** Smart Contract, Rust, Move, Javascript (SDK Development), Docker, Jira, React, Power BI, GraphQL
- GCP products, Apache Spark
- Co-Founder: Ajay Gautam, Email: ajay@mokshya.io

Blockchain Rust Developer

[Zebec Protocol](#)

November 2021– January 2022

- Similar work as above
- Solana and Ethereum Blockchains
- **Tech Stack:** Rust, Javascript (SDK Development), FastAPI, Python, DataBricks, Web Development, Docker, DevOps

Senior Product Manager: Ashish Shrestha, Email: ashish@zebec.io

Product Management

[Ingot Education](#)

September 2022–Aug 2023

- Focused on providing skills through online enhanced learning
- Currently launching Engineering Council Preparation Class
- **Tech Stack:** Product Management

Email: samundra@ingoteducation.com

Computational Research Intern

Kulekhani III Hydropower Project

April - June 2021

- Computational and Mathematical Analysis of the Performance of the Hydro Turbine
 - Cost-Benefit Analysis of the Hydropower
 - Data-driven analysis and optimization of different systems
 - **Tech Stack:** MS Excel for solving Operations Research, ANSYS for computational analysis
- Supervisor: Er. Prabesh Raj Devkota (Mechanical Head), Email: Neaprabesh@gmail.com*

EDUCATION

PhD in Computer and Mechanical Engineering

August 2023- Current

Iowa State University

GPA 4.0

Bachelor in Engineering

November 2017 - April 2022

Institute of Engineering, Pulchowk Campus

Graduated With Gold Medal

Highlight Projects

Machine Learning and Deep Learning

[Spline To Field using AutoEncoders](#)

[Vision Transformer NERF Dissection](#)

Implicit Geometric Representation for Octree Mesh construction

[Predictive Maintenance](#)

[Random Forest ML Service](#)

[Design of Experiment for Synthetic Data Generation](#)

Blockchain

Zebec

[Zebec Anchor](#)

Mokshya

[NFT-Random-Mint](#), [Merkle-Proof](#), [NFT Vesting](#), [Token-Vesting](#)

[Warkade](#), [TPS-Train](#), [Staking](#)

Computational Analysis

[Optimization of Turbine](#)

Product Management, Web Dev

[Wapal](#), [Ingot Education](#)

SCIENTIFIC PUBLICATIONS

Conference Papers

Comparative CFD analysis of Kali-Gandaki "A" Francis runner with runner generated from Bovet method

<https://dx.doi.org/10.1088/1755-1315/1037/1/012007>

Implicit Geometric Representation for Construction of Octree Mesh for Finite Element Analysis
Abstract accpeted for WCCM 2024 / PANACM 2024

SPECIALIZATION

[MLOps | Machine Learning Operations](#)

SKILLS AND INTERESTS

Programming	Rust, Python, C, C++, Javascript, Typescript,
Software	GitHub CI/CD, MLFlow, DataBricks, Hugging Face, Optuna, Azure
Hobbies	Political Analysis, Books, Poem