

**Samundra Karki**  
DOB: September 26, 1999  
[samundrakarki56@gmail.com](mailto:samundrakarki56@gmail.com)  
227 Campus Ave, Ames, IA 50014  
(1-515-7356896)



## PROFESSIONAL EXPERIENCES

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### 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, ONNX 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](mailto: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](mailto: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](mailto: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](mailto:Neaprabesh@gmail.com)*

## **EDUCATION**

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### **PhD in Computer and Mechanical Engineering**

*Iowa State University*

**August 2023- Current**

*GPA 4.0*

### **Bachelor in Engineering**

*Institute of Engineering, Pulchowk Campus*

**November 2017 - April 2022**

*Graduated With Gold Medal*

## **Highlight Projects**

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### **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**

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*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 accepted for WCCM 2024 / PANACM 2024](#)

## **SPECIALIZATION**

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[MLOps | Machine Learning Operations](#)

## **SKILLS AND INTERESTS**

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### **Programming**

Rust, Python, C, C++, Javascript, Typescript,

### **Software**

GitHub CI/CD, MLFlow, DataBricks, Hugging Face, Optuna, Azure

### **Hobbies**

Political Analysis, Books, Poem