

# Monik Raj Behera

PhD Student in Machine Learning, Halmstad University, Sweden  
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## EDUCATION

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**Halmstad University**, Sweden Dec 2025 — *Contd.*  
PhD in Machine Learning  
Research Interests: *Artificial Intelligence, Generative AI, Machine Learning, Privacy Preserving ML*

**Indian Institute of Technology, Jodhpur**, Jodhpur, India Jan 2021 — Dec 2023  
Master of Technology in Artificial Intelligence Cumulative GPA: 8.66/10.00  
Thesis Title: *pFedGame: Decentralized Federated Learning using Game Theory in Dynamic Topology*

**National Institute of Technology, Rourkela**, Rourkela, India Aug 2014 — Jun 2018  
Bachelor of Technology in Computer Science and Engineering Cumulative GPA: 8.53/10.00

## EXPERIENCE

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**Halmstad University** Halmstad, Sweden  
*PhD Student in Machine Learning* Dec 2025 — *Contd.*

- Research in Artificial Intelligence, Privacy Preserving Machine Learning and applied AI.
- Teaching and thesis supervision (Bachelor's and Master's) in Computer Science and Engineering.

**Capital One** Bengaluru, India  
*Principal Machine Learning Engineer* Jul 2025 — Nov 2025

- Research in machine learning and generative AI observability for 40+ agentic-AI systems.
- Architecture & Engineering lead for the agentic-AI framework in Rust to achieve global resource optimization with high throughput and concurrency, while achieving 28.5% savings.

**UptimeAI** Bengaluru, India  
*Principal Research Engineer* Jan 2025 — Jul 2025

- Led research & engineering of generative AI-driven RCA and system optimization (multi-agent systems, RAG), reducing analysis time by 30%.
- Led research in reinforcement & federated learning with time series foundation models for collaborative process optimization.
- Led architecture & engineered core ML platform, achieving 2.4x faster inference, 70% reduced TTM, and 45%+ savings.

**Visa** Bengaluru, India  
*Staff Software Engineer* Jan 2024 — Dec 2024

- Led research & engineering of PII sanitization (8PB/day) using generative AI, improving false positives by 11.1%.
- Spearheaded research in privacy-preserving ML, federated learning & Gen AI for collaborative fraud detection.
- Directed GNN research for risk-based authentication (21% fraud reduction) with Gen AI assisted adversarial training.

**Rakuten** Bengaluru, India  
*Senior Software Engineer - Machine Learning II* Jul 2022 — Dec 2023

- Optimized ML algorithms and models to reduce inference latency by  $\sim 82\%$  for drones, mobile towers, etc.
- Led architecture & engineering for high-throughput distributed vector search & RAG ( $\leq 50ms$  p95 latency,  $\sim 21k$  RPS).
- Directed ML platform architecture & engineering (hybrid cloud, containers, GPU sharing), reducing time-to-market by  $6x$  & cost by 72.81%.

**JP Morgan Chase & Co.** Bengaluru, India  
*Senior Associate* Feb 2019 — Jul 2022

- Built distributed AI stack for Onyx (now Kinexys) blockchain, improving graph-based anomaly detection by 65.9%.
- Led research on federated learning on blockchain network, for synthetic data generation & privacy protection in digital assets.
- Developed decentralized payment volume predictions using LSTM neural networks, optimizing transactions by 47%.

**Veritas** Pune, India  
*Associate Software Engineer* Jul 2018 — Feb 2019

- Developed capacity prediction of NAS clusters, reduced downtime by 28%; used LSTM model & data pipelines.
- Worked on distributed lock synchronizations using memcached; reduced data corruption for 30% clients.

## PUBLICATIONS AND PATENTS

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### Publications

- Monik Raj Behera and Suchetana Chakraborty. “pFedGame - Decentralized Federated Learning Using Game Theory in Dynamic Topology”. In: 2024 16th International Conference on COMMunication Systems NETworkS (COMSNETS). 2024, pp. 651 655. doi: 10.1109/COMSNETS59351.2024.10427470.
- Marco Pistoia et al. “Paving the way toward 800 Gbps quantum-secured optical channel deployment in mission critical environments”. In: Quantum Science and Technology 8.3 (2023), p. 035015.
- Monik Raj Behera et al. “Fedsyn: Synthetic data generation using federated learning”. In: arXiv preprint arXiv:2203.05931 (2022).
- Monik Raj Behera, Sudhir Upadhyay, and Suresh Shetty. “Federated learning using smart contracts on blockchains, based on reward driven approach”. In: arXiv preprint arXiv:2107.10243 (2021).
- Monik Raj Behera, Suresh Shetty, Robert Otter, et al. “Federated learning using peer-to-peer network for decentralized orchestration of model weights”. In: Authorea Preprints (2021).
- Monik Raj Behera, Robert Otter, Suresh Shetty, et al. “Federated learning using distributed messaging with entitlements for anonymous computation and secure delivery of model”. In: Authorea Preprints (2023).

### Patents

- Sudhir Upadhyay et al. Systems and methods for privacy preserving, network analytics, and anomaly detection on decentralized, private, permissioned distributed ledger networks. US Patent App. 17/806,024. Oct. 2023.
- Sudhir Upadhyay et al. Systems and methods for generating synthetic data using federated, collaborative, privacy preserving models. US Patent App. 17/654,450. Mar. 2023.
- Sudhir Upadhyay and Monik Raj Behera. Systems and methods for reward-driven federated learning. US Patent App. 17/804,859. Dec. 2022.
- Monik Raj Behera et al. Systems and methods for federated learning using peer-to-peer networks. US Patent App. 17/649,471. Aug. 2022.
- Monik Raj Behera et al. Systems and methods for federated learning using distributed messaging with entitlements for anonymous computation and secure delivery of model. US Patent App. 17/456,113. May 2022.

## REWARDS AND RECOGNITIONS

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<b>Visa Star Performer Award</b> Fraud detection, Federated Learning and Generative AI initiatives	Bengaluru, India Sept 2024
<b>Rakuten Individual Excellence and Outstanding Innovation Award</b> Machine Learning Inference platform, Vector Search Engine, Semantic search for e-commerce	Bengaluru, India Aug 2023
<b>SWIFT 2021 Global Hackathon</b> Winner for synthetic data using GAN and FL [URL]	Bengaluru, India Oct 2021
<b>JP Morgan CTO Innovation Award</b> Federated learning and ML for decentralized network	Bengaluru, India Jan 2022

## SKILLS

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- **Programming:** Python; Golang; Java; Rust; C++
- **Technologies:** Git; Machine Learning; Deep Learning and AI; Generative AI; Privacy AI; Distributed Computing; Search Engineering; Blockchain; Docker; System Engineering
- **Frameworks:** Nvidia Triton; Tensorflow; PyTorch; ONNX; Scikit-Learn; Ray; Spark; Dask; Candle; HF (Transformers); Numpy; Pandas; Polars; OpenCV; Gin; Fiber; FastAPI; Spring; Axum; Vertx; Solidity; Kafka; NATS; Observability
- **Cloud Computing and Platform Engineering:** AWS; GCP; Azure; Digital Ocean; Kubernetes; Docker
- **Soft Skills:** Leadership; Team work; Mentorship; Problem Solving; Stakeholder communication; Story Telling; Public Speaking