

Dr. Bishnu P. Marasini

Dr. Bishnu P. Marasini is Senior Research Associate at NHRC. He began his career as a computer hardware technician. Later, completed PhD in M. Medicine and moved into pre-clinical trial research, health data analysis and drug discovery via both *in vitro* and *in silico* computational method.

He applies AI-driven and *in silico* approaches to identify and optimize novel therapeutic candidates. His work bridges experimental pre-clinical research, medicinal plants, integrating real-world health data to support evidence-based decision-making in drug development. He is a recognized expert in computational drug discovery and is the holder of a **patent** in this field.

Rational Application of Artificial Intelligence and AI-Driven Tools in Research

Dr. Bishnu Marasini,

Ms. Namita Ghimire, Dr Rajendra BC

NHRC, Kathmandu, Nepal

Artificial Intelligence in Research

Artificial Intelligence is reshaping how researchers design studies, analyze health data, and communicate scientific innovation through an expanding ecosystem of specialized tools.

ChatGPT / LLMs

Proposal drafting, summarizing evidence, structuring protocols

Literature AI

Automated literature searching, screening, and evidence synthesis

ML Predictive Models

Risk stratification, patient outcome prediction, clinical decision support

Perplexity, Claude, Gamma.app, Elicit, SciSpace, Consensus, Gemini, NotebookLM, Jenni AI, Litmaps, Research Rabbit

Ethical Principles for AI Use in Health Research

- AI methods, models, and datasets used must be disclosed in all publications and proposals.
- Patient-level health data must be anonymized; national guidelines apply to all AI training data.
- AI augments, never replaces, researcher judgment. Verification by domain experts is mandatory.
- AI-generated content must be declared; researchers must authenticate intellectual contributions.
- All AI pipelines must be documented and reproducible; model versioning and code sharing are encouraged.

AI in Drug Discovery Research

- Dataset was classified into 813 active and 710 inactive compounds
- Putative anti-cancer drugs (813, clinically used medicine to toxic; FDA approved/not approved)
- Searched 10 million (eMolecule data base) + 500 our database of molecules of medicinal plants of Nepal)

Artificial Intelligence in Research

Artificial Intelligence is reducing our time and effort in research and also helping to get quality result.

Need Data

Prediction

Need Correct Data

Accuracy

**Need Data from
Reliable Source**

Precision

Need Large Set of Data



Artificial Intelligence in Research

Current Gaps

- Limited number of researchers trained in AI/ML methodologies in health sciences
- Shortage of interdisciplinary teams combining biomedical expertise with data science
- Insufficient computational infrastructure and curated health datasets for AI training
- Lack of structured curricula for AI ethics in health research training programs

Artificial Intelligence in Research

NHRC will lead to fulfill the Gaps

- **Capacity building** Section will be starting training in AI/ML methodologies in health sciences
- **Collaboration** of interdisciplinary teams combining biomedical expertise with data science
- Infrastructure development of hub for **Research data repository**
- Preparation structured guideline for **AI ethics** in health research

Team Work is the Best Work

Thank You