Tuan Nguyen

📍 Boulder, CO   📞 (303)-472-7172   ✉ tuan.nguyen@colorado.edu   🔗 tuananguyen.me

Research Interests

- **Physics-Informed Neural Networks (PINNs):** Build controllable and explainable models by adding Physics Constrains to Neuron Networks.
- **Graph Neural Network**: Develop GNNs that process multi-modal input effectively. Integrate GNNs with computer vision and NLP models for holistic reasoning.

Education

University of Colorado Boulder *2026*
MS in Data Science

- GPA: 4.0/4.0
- Courses: Statistical Methods and Applications (I, II), Data Mining, Machine Learning, Neural Nets & Deep Learning.

Hanoi University of Mining and Geology *2015*
BS in Geophysical Engineering

- GPA: 3.0/4.0
- **Thesis:** 3D Seismic Interpretation and Attribute Analysis for Reservoir Characterization: A Study in Block 12W in the Nam Con Son Basin, Offshore Vietnam.

Work Experience

Data Scientist – Energy Sector *Vietnam Petroleum Institute*   *Hanoi, Vietnam | June 2022 – Aug 2024*

- Leveraged LLM Contextual Learning by RAG, Knowledge Graph
- Optimized Prompt Engineering for Automated Reporting System
- Designed Database SQL, Developed PyPI Packages
- Applied EDA, PCA, Machine Learning for Well-log prediction
- Customized Well-log & Maps Visualization on MS PowerBI
- API & Web-App Development

Geophysicist *Vietnam Petroleum Institute*   *Hanoi, Vietnam | June 2016 – May 2022*

- Seismic Inversion, Specific Seismic Attributes
- Well-ties, Horizons & Faults Interpretation
- Velocity Modeling, Environmental Modeling
- Subsurface & Reservoir Mapping

Projects

Chatbot-driven map navigation with integrated graph database *2024*

- Developed a chatbot-operated map-based website that executed user commands for navigation, leveraging a graph database to link map functions with domain knowledge and provide real-time visual results besides chat responses.
- Tools Used: SQL, Neo4j, OpenAI, RESTAPI.

Automated Daily Bach Ho oil field operations dashboard and reporting system using LLM. *2024*

- Developed an automated oil field daily reporting system, saving one employee's daily workload by streamlining data transfer to SQL database, summarization, and reporting (via LLM), while enabling multi-level management supervision.
- Tools Used: Ollama, GeminiAPI, SQL, MS Fabric, MS Automate, MS PowerBI.

E&P knowledge sharing with RAG chatbot and knowledge graph integration *2023*

- Developed an internal document-sharing web-based application integrated with a retrieval-augmented generation (RAG) chatbot system, significantly enhancing document sharing capabilities by enabling chatbot interaction with local domain data and optimizing for Vietnamese language.
- Tools Used: Python, Weaviate, Django, Docker.

VPI-Mlogs: Web-based application for petrophysical data analysis *2022*

- Developed web application for applying data tools and machine learning algorithms to petrophysical borehole data including data loading, anomalies detection, data cleaning, data visualization, missing log prediction.
- Tools Used: SQL, RESTAPI, Scikit-learn, Streamlit, Seaborn, Plotly.

Seismic Stratigraphy Analysis in Miocene and Oligocene sediments to determine unstructured trap at Block 09-1, Cuu Long Basin *2021*

- Semi-automatically seismic data interpreting supports the environmental model simulation to predict potential unstructured reservoirs.
- Tools Used: Paleoscan, Petrel.

Publications

- **Nguyen, A.T**. 2022. VPI-Mlogs: A web-based machine learning solution for applications in petrophysics. *Petrovietnam Journal, 10* (Nov. 2022), 46–52. DOI: 10.47800/PVJ.2022.10-06 ↗.

- Nguyen, T.H., Hieu, N.T., Lam, N.D., Ha, H.T.T., **Nguyen, A.T.**, Minh, T.N., Son, N.H., and Huy, V.Q. 2021. Results of seismic surveys offshore the northern part of Bac Bo Gulf. *Petrovietnam Journal, 5* (May 2021), 5–10. DOI: 10.47800/PVJ.2021.05-01 ↗.

Hackathon

- (2024) Top 10 Team Performance in Data Science Hackathon *CU Boulder*

Certifications

- (2022) Data Scientist Associate *DataCamp Certification*
- (2021) Seismic Signal Processing *Vietnam Petroleum Institute*
- (2020) Geostatistical Inversion. *PetroVietnam - CGG SA*
- (2018) Advanced Seismic Data Interpretation *Vietnam Petroleum Institute*

Technologies

Languages: Python, SQL, JavaScript
Database: MySQL, MongoDB, Weaviate, Neo4j
Frameworks: Scikit-learn, Torch, TensorFlow, Django, Streamlit
Platforms: Microsoft Automate, Copilot Studio, Prompt Flow
GIS Software: QGIS, MapInfo, Mapbox Studio
Petroleum Software: SLB Petrel, IHS Kingdom, Hampson Russell, Ellis Paleoscan