# Bangladeshi PhD Researcher Conducts AI-Driven Energy Research at Leading U.S. Engineering Institution

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Bangladeshi engineer and doctoral researcher Shaolin Jahan Eidee is conducting advanced artificial intelligence-driven drilling research at the Colorado School of Mines, a leading American engineering institution internationally recognised for research in energy, mining and subsurface systems.

The university is ranked among the top petroleum engineering institutions in the United States. Eidee is currently pursuing a PhD in Petroleum Engineering, where her research focuses on developing physics-informed machine learning frameworks for hard-rock drilling optimisation and real-time prediction of drilling-bit wear and downhole failure.

Her work combines mechanistic drilling physics, high-frequency drilling telemetry and data-driven modelling. Researchers say the aim is to improve operational reliability, reduce non-productive time and enhance safety in subsurface energy operations.

The research has potential applications in geothermal energy development, drilling automation and critical subsurface infrastructure systems. According to researchers, the work also aligns with broader U.S. priorities related to energy innovation, infrastructure resilience and advanced engineering technologies by improving drilling efficiency and reducing operational risks.

Eidee’s research has been presented at major U.S. technical conferences, including the Geothermal Rising Conference and the U.S. Rock Mechanics/Geomechanics Symposium.

In 2025, she received Oklahoma State University’s university-wide Master’s Phoenix Award in recognition of outstanding research achievement, academic excellence and leadership.

A faculty researcher in petroleum engineering at the Colorado School of Mines said: “Shaolin’s research combines artificial intelligence with drilling systems engineering to address important challenges in subsurface energy operations. Her work contributes to ongoing efforts to improve drilling efficiency, operational safety and predictive decision-making in energy infrastructure.”

Md Tauhidur Rahman, former assistant professor of Petroleum and Mining Engineering at the Military Institute of Science and Technology, said Eidee had demonstrated strong technical ability, discipline and research potential from the beginning of her academic career.

“Her progression from MIST to advanced research in the United States reflects her sustained commitment to petroleum and subsurface engineering research,” he added.

Before beginning her doctoral studies, Eidee worked as a university lecturer and completed graduate degrees in both petroleum engineering and applied statistics and data science, building an interdisciplinary background in engineering, machine learning and data-driven modelling.

From Bangladesh to one of the United States’ leading engineering institutions, Shaolin Jahan Eidee is emerging as a researcher working at the intersection of artificial intelligence, drilling systems engineering and energy technology. Her ongoing research reflects growing national and industrial interest in improving the safety, efficiency and reliability of subsurface energy operations.