Simorgh
Promoting safety and efficiency through real-time fracture monitoring

In a nutshell

Fracture monitoring is a process to assess and analyse fractures and cracks in solid material. It is a critical component that provides safety and efficiency in industries such as oil and gas, mining, civil engineering, geothermal energy extraction. It is particularly key in facilitating Co_2 sequestration – the process of capturing and storing carbon dioxide. All these processes rely on fracture monitoring to predict and monitor the growth of fractures – both for the continued safety of their operations and ensuring operational efficacy. Currently there are two prevailing methods of fracture monitoring: Traveltime inversion – which is quick but lacks precision, and waveform-based methods – which are more accurate but significantly slower. Neither method can provide the real-time features of fractures needed to make immediate decisions, crucial in industries where safety and timely responses are non-negotiable. SIMORGH addresses these challenges head on, meaning industry no longer has to choose between speed and precision.

Why is our technology important?

SIMORGH provides real-time, high-precision fracture monitoring thanks to a combination of advanced algorithms and cutting-edge software. Unlike other AI-based tools, our software doesn't rely on a large amount of training data. It incorporates human expertise to set hyperparameters to guide the software. These can be customized based on individual situations and don't rely on further human intervention, reducing the cost of monitoring by 70%. SIMORGH's versatility allows the monitoring of fractures varying sizes from millimetres to kilometres in real time, a critical aspect for swift hazard detection and taking quick actions to prevent accidents. The technology also allows for a large number of sensors be installed, bringing new level of precision in monitoring.

The benefits of our solution

- Automated high-precision algorithm: eliminates labor-intensive data processing, ensuring speed and accuracy.
- Scalability: proven efficacy from monitoring millimeter-scale fractures in the lab to kilometer-scale fractures in the field, across diverse material types.
- Universal data format: designed to be adaptable and support a range of common data formats facilitating smooth integration into existing systems
- Robust data management: Handles various data collection methods – including continuous and trigger-based approaches.
- Cross-industry application: our technology caters for a broad range of sectors from Structural Health Monitoring (SHM) to Non-Destructive Testing (NDT) and MicroSeismic monitoring (MSeis).

Keywords

Fracture monitoring, NDT, SHM, MicroSeismic, mining, oil and gas, energy extraction, automated data processing, AI-enabled, safety, real-time monitoring

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