

Muhammad Haseeb Mukhtar

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EDUCATION

University of Houston

PhD Candidate – Petroleum Engineering

Advisor: Dr. Christine Ehlig-Economides

Houston, USA

Aug 2021 – Expected Apr 2027

NED University of Engineering and Technology

Bachelor of Engineering – Petroleum Engineering

Karachi, Pakistan

Feb 2017

SUMMARY

Petroleum engineering PhD candidate who started in the field, with 3.5+ years as an on-site production engineer managing workovers, stimulation, artificial lift design/optimization, and well testing. Research spans CO₂ utilization, sequestration, and waterflooding design, including detailed field studies in the Permian Basin and offshore NW Australia. Currently developing a wastewater disposal optimization tool to prevent leakage events, building on a self-designed machine learning framework that identifies and characterizes leaking legacy wellbores. Interested in building data-driven systems and technologies that rethink and streamline established industrial workflows.

PROFESSIONAL EXPERIENCE

Hilcorp Energy

Houston, USA

Co-Op Student – Operations, East Texas Asset

May 2025 – Sept 2026

- Identified, designed, and pitched production restoration projects; returned a dead well to ~1 MMscf/d of gas production.
- Analyzed the complete life of 200+ wells and built and maintained accurate, chronological wellbore schematics in WellView for the East Texas Asset.

Gulf Coast Carbon Center, Bureau of Economic Geology

Austin, USA

Research Intern

May 2024 – Aug 2024

- Analyzed the leakage profile of a nearby legacy wellbore under CO₂ injection.
- Built a coupled wellbore–reservoir model in T2Well-ECO2N and ran multiple leakage scenario simulations.

SLB – CapturePoint – University of Houston Externship

Houston, USA

Reservoir Engineer – Extern

May 2023 – Aug 2023

- Built a geological model of CapturePoint's Denver City Field (George Allen Unit / Ruth Hudson Unit).
- History-matched an Eclipse (E300) compositional model across primary, secondary, and tertiary recovery.
- Designed and analyzed WAG cycles to optimize recovery.
- Performed dimensionless forecasting and economic analysis.
- Presented findings at the SPE Improved Oil Recovery Conference 2024, Tulsa, OK.

SEG EVOLVE Carbon Solutions Program

Houston, USA

Engineer – Intern

Aug 2022 – Feb 2023

Evaluated CO₂ storage potential in the depleted Wanaea and Cossack fields, NW Australia.

- Collaborated with a team of 8 engineers and geoscientists and industry/academic mentors, integrating technical and commercial data for project decisions.
- Developed CO₂ source, capture, and transportation designs and assessed their business viability.
- Supported reservoir simulation and monitoring plan design.
- Presented findings at the CCUS Conference 2023, Houston, TX.

Oil and Gas Development Company Limited

Islamabad, Pakistan

Production Engineer – Qadirpur Gas Field

Oct 2017 – May 2021

- Managed day-to-day on-site production operations at Qadirpur, one of Pakistan's largest gas fields.
- Diagnosed underperforming wells; designed and pitched artificial lift solutions to restore deliverability.
- Planned and supervised workovers, stimulation, interventions, surveys, and well tests from design through execution.
- Implemented HSE protocols and led safety drills and training for field crews.
- Coordinated with drilling, maintenance, and service company teams to resolve operational issues and minimize downtime.

RESEARCH AND PROJECTS

Categorizing Legacy Wellbores in the Delaware Basin Based on Failure Risks Under Wastewater Injection – SPE ATCE 2025, Houston TX

- Developed a machine learning framework that classifies legacy wellbores by failure risk to identify leaking wells (patent pending).
- Geospatially integrated surface deformation, wellbore construction (depth and age), and produced/injected volumes to assign a risk score to every well in the county.
- Flagged ~15% of wellbores in Reeves County, TX as requiring immediate remediation; work featured in the Houston Chronicle and Houston Public Media radio.
- Led to an Interagency Cooperation Contract between UH and the Railroad Commission of Texas.

Identifying Leaking Legacy Wellbores Using Satellite Imagery Analysis (SIA) Under Wastewater Disposal

- Developed a technique using optical and SAR satellite imagery to identify leaking wellbores at county scale.
- Integrated a machine learning model on current and historical imagery to pinpoint leak location and timing, building a spatiotemporal leakage dataset.
- Patent filing planned upon proof-of-concept.

Evaluation of Future CO₂ Injection in Denver City Field for EOR and CCUS – SPE IOR Conference 2024, Tulsa OK

- Built a geological and history-matched flow model to evaluate recovery from the main oil column (MOC) and residual oil zone (ROZ).
- Forecast EOR options ranging from low-capital injection increases in existing patterns to expansion drilling into new pattern areas.
- Delivered realistic renewed CO₂ injection strategies to current field operators.

Extended Aquifer System Pressure Behavior Under Carbon Storage – SPE ATCE 2023, San Antonio TX and SPE Journal 2024

- Reviewed successful and unsuccessful open saline aquifer CO₂ storage projects worldwide.
- Defined key fundamentals for selecting storage aquifers.
- Analyzed unexpected lateral plume migration and aquifer pressure buildup during CO₂ injection.
- Assessed conditions for long-term, safe, and permanent storage during and after injection.

Evaluation of CO₂ Storage Potential in Depleted Hydrocarbon Fields: A Case Study of Cossack and Wanaea Fields, NW Australia – CCUS Conference 2023, Houston TX

- Multidisciplinary appraisal of depleted Carnarvon Basin fields by a team of 8 engineers and geoscientists (SEG EVOLVE 2022–23).
- Integrated geological, geophysical, engineering, regulatory, and infrastructure data to assess CCS project economics.
- Achieved an estimated storage cost of USD 42.73/tCO₂.

SKILLS

Software: ArcGIS, Petrel, Eclipse, CMG (IMEX, GEM), T2Well, Petra, Harmony, WellView, Techlog, MATLAB, PVTsim, Python (machine learning, artificial neural networks).

Languages: English (Fluent)

Teamwork:

- Lead a research group with faculty from 4 different schools.
- Collaborate with Chemical Engineering, Civil Engineering, and Geoscience departments on 3 projects.

AWARDS AND ACHIEVEMENTS

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| • TexE Fellow – Cohort 2026 | 2025–2026 |
| • UH PetroBowl Team – Regional Qualifier Winner & 4 th in World Championship | 2025–2026 |
| • Media: Houston Chronicle profile; Houston Public Media radio interview | 2026 |
| • Published in peer-reviewed SPE Journal | 2024 |
| • Elected Senator – Student Government Association, University of Houston | 2024–2025 |
| • Presenting author at numerous petroleum conferences and workshops | 2023–Present |
| • Vice President – SPWLA UH Student Chapter | 2023–2024 |
| • Active reviewer for multiple peer-reviewed journals | 2023–2026 |