

Curriculum Vitae

Yeongju Kim

Ph.D. candidate

Department of Energy Systems Engineering

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Korea

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Areas of Expertise

- Thermo-Hydro-Mechanical-Chemical Simulation
- Machine learning
- Optimization
- Development of Oil and Gas Fields
- Subsurface Modeling
- Inverse Modeling
- Flow Assurance
- Geological CO₂ storage
- High-level Nuclear Waste Disposal

Work Experience

Dec 2023 to Feb
2024

Visiting Researcher

MCERI, Texas A&M University

Texas, United States

Intern

Mar 2018 to July 2018 Co-Design and Parallel Processing Laboratory
Seoul, Republic of Korea

Intern

Jan 2017 to Feb 2017 GeoGeny Consultants Group Inc.
Seoul, Republic of Korea

Academic Background

Mar 2014 to Feb 2019 B.S., Energy Resources Engineering, Seoul National University

B.S., Computer Science and Engineering, Seoul National University

Publications

- International Journal Articles

1. Kim, Y., Min, B., Sun, A., Ren, B., Jeong, H., 2025. Learning-based Pattern-Data-Driven Forecast Approach for Predicting Future well responses, Journal of Petroleum Exploration and Production Technology,
2. Oh, H., Yoon, H., Park, S., Kim, Y., Choi, B. Sun, W., Jeong, H., 2024. Estimation of CO2 Storage Capacities in Saline Aquifers Using Material Balance, Fuel, 132411, <https://doi.org/10.1016/j.fuel.2024.132411>
3. Yun, Y., Kim, T., Hwang, S., Oh, H., Kim, Y., Jeong, H., Kim, S., 2022. Prediction of liquid surge volumes and flow rates for gas wells using machine learning, J. Natural Gas Science and Engineering, 104802, <https://doi.org/10.1016/j.jngse.2022.104802>
4. Jo, S., Jeong, H., Min, B., Park, C., Kim, Y., Kwon, S., Sun, A., 2021. Efficient deep-learning-based history matching for fluvial channel reservoirs, J. Pet. Sci. Eng., 109247, <https://doi.org/10.1016/J.PETROL.2021.109247>

- Domestic Journal Articles

1. Oh, B., Kim, Y., Lee, W., Jang, Y., Min, B., Jeong, H., 2021. Optimization of Well Operations in a Carbonate Reservoir Using Stochastic Simplex

Approximate Gradient. J. Korean Soc. Miner. Energy Resour. Eng. 58, 119–129. <https://doi.org/10.32390/KSMER.2021.58.2.119>

- Non-Peer Reviewer Journal Articles

1. None

Conferences

- International Conferences

1. Kim, Y., Kim, K., Kim, M., Lee, C., Jeong, H., Inversion of the Barcelona Basic Model Parameters for Thermo-Hydro-Mechanical Simulation of High-Level Radioactive Waste Disposal System, The 37th International Geological Congress 2024, Busan, Korea, 25 Aug 2024 - 31 Aug 2024.
2. Park, S., Kim, Y., Oh, H., Yoon, H., Choi, B., Sun, W., Jeong, H., Estimating CO₂ storage capacity in Saline Aquifers Using Enhanced Material Balance, The 37th International Geological Congress 2024, Busan, Korea, 25 Aug 2024 - 31 Aug 2024.
3. Kim, Y., Ren, B., Jeong, H., Novel Learning-based Pattern-Data-Driven Forecast Approach for Predicting Future Well Responses, InterPore2024 16th Annula Meeting & Conference Courses, Qingdao, China, 13 May 2024 - 16 May 2024.
4. Park, S., Kim, Y., Oh, H., Yoon, H., Choi, B., Sun, W., Jeong, H., Assessment of CO₂ Storage Capacities in Saline Aquifers Using Material Balance Equations, InterPore2024 16th Annula Meeting & Conference Courses, Qingdao, China, 13 May 2024 - 16 May 2024.
5. Yoon, H., Kim, Y., Jeong, H., Machine-Learning-Based Robust Optimization of Brine Extraction Well Placement in CCS Projects Using Fast Marching Method, InterPore2024 16th Annula Meeting & Conference Courses, Qingdao, China, 13 May 2024 - 16 May 2024.
6. Lee, J., Park, S., Kim, Y., Ryu, H., Kwack, J., Jeong, H., Min, K., Building a fracture network model from Utah FORGE microseismic data from hydraulic stimulation, AFORE 2023, Jeju, Korea, 7 Nov 2023 - 11 Nov 2023.
7. Yoon, H., Kim, Y., Jeong, H., Ren, B., Sun, A., Choe, J., Lee, K., Robust Optimization of Brine Extraction WellLocation for CCS: A Surrogate

Model Using FMM and CNN, 2023 EAGE 84th Conference & Exhibition, Vienna, Austria, 5 June 2023 - 8 June 2023.

8. Yoon, H., Kim, Y., Jeong, H., Sun, A., Ren, B., Machine-Learning-Based Robust Optimization of Brine Extraction Well Placement in CCS Projects Using Fast Marching Method, InterPore2021 13th Annula Meeting, Online, 31 May 2021 - 4 June 2021.
 9. Kim, Y., Jeong, H., Oh., B., Choe, J., Sun, A. Y., Development of a Python Package for Predicting Reservoir Performance Using Machine Learning, The 20th Annual Conference of the International Association for Mathematical Geosciences. State College, Pennsylvania, USA, Aug 10-16, 2019.
- Domestic Conferences
 1. Jeong, Y., Kim, Y., Jeong, H, Prediction of Rod Pump Failure Using Machine-learning and Scaled Load Ratio, 2024 Fall Joint Conference and the 9th KOMIR International Symposium, Nov 6-8, 2024.
 2. Jeong, H., Kim, D., Lee, Y., Kim, Y., Choe, J., Determination of Safe CO2 Injection Constraints Considering Uncertainty in Storage Site Properties, 2024 The 3rd Spring Conference of The Korean Society of Petroleum Engineers, Apr 18-19, 2024.
 3. Jeong, H., Choe, J., Kim, D., Lee, Y., Kim, Y., Sensitivity Analysis of Carbon Storage Safety and Determination of Injection Constraints, 2023 Fall Conference of K-CCUS & Tech Fair, Dec 6, 2023.
 4. Oh, H., Kim, Y., Yoon, H., Kim, J., Jeong, H., Evaluation of CO2 Storage Capacities using Material Balance Equations, 2023 The Korean Society of Economic and Environmental Geology, Apr 18-21, 2023.
 5. Kim, Y., Lee, Y., Jeong, D., Jeong, H., Prediction of Sonic Log Using Machine Learning and Petrophysical Interpretation, 2022 Fall Joint Conference and the 8th International Symposium on Mine Reclamation, Nov 2-4, 2022.
 6. Lee, Y., Kim, Y., Kim, D., Jeon, H., Jeong, H., Choe, J., Analysis on Trapping Mechanism for Various Well Operation Conditions of Carbon Storage in an Aquifer, 2022 Fall Joint Conference and the 8th International Symposium on Mine Reclamation, Nov 2-4, 2022.

7. Kim, Y., Jeong, H., Lee, C., Lee, M., Inversion of Barcelona Basic Model Parameters of Kunigel-V1, 2022 Autumn Conference of Korean Radioactive Waste Society, Oct 26-28, 2022.
8. Yoon, H., Kim, Y., Oh, H., Jeong, H., Fast Robust Optimization of a Brine Extraction Well Location for Carbon Storage Using Fast Marching Method and Convolutional Neural Network, Conference of Korean Society of Petroleum Engineers, June 24, 2022.
9. Kim, Y., Jeong, H., Learning-based Pattern-data-driven Forecast Approach for Predicting Reservoir Performance, 2022 118th Spring Conference of Korean Society of Mineral and Energy Resources Engineers, May 19 - 21, 2022.
10. Kim, Y., Jeong, H., Oh, B., Yun, Y., Son, C., Lee, D., Jun, J., Park, Y., Diagnosis of Rod Pump Anomalies Using Deep-learning-based Classification of Dynamometer Cards, 2021 Fall Joint Conference of KSMER, KSRM, KSEG, KSPE, Oct 28-29, 2021.
11. Yoon, H., Kim, Y., Oh, H., Jeong, H., Optimization of Brine Extraction Well Locations for Safe Geological Carbon Storage Using Fast Marching Method and Deep Learning, 2021 Spring Conference of Korean Society of Mineral and Energy Resources Engineers, May 20-21, 2021.
12. Jeong, H., Oh, B., Lee, W., Jang, Y., Kim, Y., Optimization of Operating Conditions in the Haliba Field Using a Stochastic Gradient Method, 2019 Fall Conference of Korean Society of Mineral and Energy Resources Engineers, Jeju, South Korea, Nov 6 – 8, 2019.
13. Kim, Y., Jeong, H., Oh, B., Choe, J., Development of Python Package for Predicting Performance using Machine Learning, 2019 Spring Conference of Korean Society of Mineral and Energy Resources Engineers, Daejeon, South Korea, May 9-10, 2019.
14. Oh, B., Jeong, H., Lee, W., Jang, Y., Choe, J., Kim, Y., Lee, J., Optimization of Operating Conditions of a Carbonate Reservoir Using a Stochastic Gradient Method, 2019 Spring Conference of Korean Society of Mineral and Energy Resources Engineers, Daejeon, South Korea, May 9-10, 2019.

Patents

- Method and system for predicting failures of sucker rod pumps using scaled load ratios
 - Granted, Publication number US11898552B2, USA, 13 February 2024
 - Method and system for predicting rod pump failure using scaled load ratio
 - Pending, Application number CN115935527A China, 16 August 2021
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Awards and Honors

- Kim, Y., Lee, J., Park, S., Ryu, H., Kwack, J., Jeong, H., Min, K., Third Prize, SPE Geothermal datathon, SPE, Sep 2023.
 - Kim, Y., Jo, W., Lee, Y., Kim, J., Jeong, H., Choe, J., Grand Prize, Utilization of Geological Data and Artificial Intelligence Contest, KIGAM, Jul 2023.
 - Kim, Y., Lee, Y., Jeong, H., Choe, J., Third Prize, Utilization of Geological Data and Artificial Intelligence Contest, KIGAM, Jul 2021.
 - Kim, Y., Jeong, H., Jang, H., Yu, J., Korea Geophysical and Physical Exploration Association Award, Mine-Tech Festa, KOMIR, Oct 2020.
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Language & Other skills

- Language
 1. Python
 2. C/C#
 3. Java
 4. R
 5. Javascript
 6. MATLAB
 - Software Proficiencies
 1. CMG (IMEX, GEM, STARS, CMOST, WINPROP)
 2. Schlumberger (Petrel, ECLIPSE 100 & 300, PIPESIM, OLGA, Symmetry, Techlog)
 3. MATLAB
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Education & Certifications

- **CMG**

1. Introduction CMG Workflow & Modelling of Natural Fracture Reservoir (2021.08.23~2021.08.27)
2. Modeling of Shale, Tight Oil and Gas Reservoirs (2020.01.06~2020.01.10)
3. Advanced PVT Modeling with WinProp (2019.08.26~2019.08.30)

- **Schlumberger**

1. Petrel Property Modeling (2021.11.18~2021.11.19)
 2. CCS Simulation (2021.11.02, 2021.11.09)
 3. Symmetry Fundamentals (2021.02.02~2021.02.05)
 4. PIPESIM Fundamentals (2020.10.28, 2020.10.30)
 5. OLGA Flow Assurance (2020.05.18, 2020.05.20, 2020.05.22)
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