

# JAEWOO AN

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## RESEARCH INTERESTS

- Geomechanics simulation with fracture intersections using EDFM in AD-GPRS.
- Stability and Convergence analysis for the flow-geomechanics-coupled problems using EDFM.
- Establishment of Digital Twins for offshore platforms using simulation with estimated field data

## EDUCATION

**Ph.D. of Science in Energy Resources Engineering**(GPA: 3.99/4.0, In progress) **9/2018 - Now**

*Stanford University*, Stanford, California, United States of America

- Topic: Stability and convergence analysis of coupled flow and geomechanics problem with fractures
- Advisor/specific major: Hamdi Tchelepi/Oil and Gas Reservoir Simulation

**Master of Science in Energy Systems Engineering**(GPA: 4.16/4.3) **2/2016**

*Seoul National University*, Seoul, South Korea

- Thesis: "A Web-based Drilling Simulation Systems for Modeling of Various Drilling Problems"
- Advisor/specific major: Jonggeun Choe/Petroleum Engineering

**Bachelor of Science in Mechanical & Aerospace Engineering**(GPA: 3.84/4.3) **2/2014**

*Seoul National University*, Seoul, South Korea

- Thesis: "Developing Simple Chord Piano by Depth Sensing Camera"
- Double Major in "Business Administration"

## WORKING EXPERIENCE

**Chevron Energy Technology Company** **6/2020-9/2020, 6/2021-9/2021**

Petroleum Engineering Intern

- Build simulation system in Petrel for stress-dependent flow analysis of fracture reservoir with DPDK
- Build a Petrel plugin for SPSK/DPDK with LGR considering directional fracture permeability
- Will build ML-assistant workflow to accelerate Geomechanics workflow

**Hyundai Heavy Industries Green Energy** **1/2017-4/2018**

Mechanical Engineer for Photovoltaic Module Frames and Sealant

- Design PV module frames and sealant / Manage production process of PV modules

**Hyundai Heavy Industries**(The Largest Offshore Platform EPCIC Contractor) **1/2016-12/2016**

Safety Engineer for Offshore Platforms

- Badamyar LCP & Bridge(TOTAL Myanmar, Sail-away: Nov/2016), Baronia CPP Project(Petronas)
  - Design and Procure a Firefighting System(Deluge Valve Skid, Inergen Skid, and Loose Equipment)
  - Review Safety Studies(FRA, DOS, HAZID, HAZOP, QRA, etc.)
- Nasr Package 2(ADMA-OPCO): Heat Stress Analysis on Piping for PFP Optimization
- Jangkrik FPU(ENI): Environmental Analysis of Temperature in Muster Area during Emergency

## RESEARCH EXPERIENCE

### Drilling Simulation

- Model various drilling problems: cuttings accumulation, pipe sticking, lost circulation, gas kick
- Develop a web-based drilling simulation system
- Analyze kick behavior with OBM in Riserless drilling

## Reservoir Simulation

- Enhance coupled flow and geomechanics simulation with fractures in AD-GPRS
- Reduce History Matching Time by combining Ensemble Kalman Filter with Ensemble Smoother

## Actively participate in research projects

- FC-Maelstorm to develop GEOSX, high performance computing software for flow and geomechanics simulation with Lawrence Livermore National Lab and Total SE
- Core technology development for deepwater O&G production system FEED & floating systems
- Developing an oil & gas field telemetry and management system using digital technology
- Development of a safety evaluation methodology for subsea production system design and subsea installations by Daewoo Shipbuilding & Marine Engineering
- Optimization of drilling process concerning time and expenditure Funded by KOGAS

## PUBLICATIONS

### Journals

- Hong, S., Lee, K., **An, J.**, Kim, H., and Park, Y., 2016, “Effects of Operation Time for Well Control on Kick Influx and Pressure Behavior in a Wellbore,” Journal of the Korean Society of Mineral and Energy Resources Engineers(KSMER)

### Conferences

- Yang, H.J., Yeo, T., and **An, J.**, 2022, “Recurrent convolutional neural network for the surrogate modeling of subsurface flow simulation,” OTC Asia 2022, Virtual, 22-25 March. (submitted)
- Park, J., **An, J.**, and Choe, J., 2016, “Well Control Modelling with Oil-based Muds in a Dual Gradient Drilling System,” 107th KSMER Conference, Gyeongju, Korea, 3-4 Nov.
- **An, J.**, Park, J., Hwang, S., Yang, H., Ahn, J., and Choe, J., 2015, “A Cuttings Accumulation Model Considering Rate of Penetration Factors”, 105th KSMER Conference, Jeju, Korea, 28-30 Oct.
- **An, J.**, Lee, K., and Choe, J., 2015, “Well Control Simulation Model of Oil-based Muds for HPHT Wells,” 2015 Asia Pacific Oil & Gas Conference and Exhibition, Bali, Indonesia, 20-22 Oct. **(Quote: 9)**
- Jo, H., **An, J.**, Lee, K., and Choe, J., 2015, “Crossover Use of Ensemble Kalman Filter and Ensemble Smoother for Efficient History Matching,” 77th EAGE Conference & Exhibition, Spain, 1-4 June
- **An, J.**, Jang, M., Kim, J., Kang, B., Lee, K., and Choe, J., 2014, “A Web-based Well-control Model for Various Drilling Conditions”, 103th KSMER Conference, Jeju, Korea, 6-8 Nov.

### Posters

- Kang, B., Ju, S., Kim, K., Ahn, J., Lee, K., **An, J.**, Shin, C., Jang, S., and Choe, J., 2014, “Analysis of Controllable Factors for Efficient Hydraulic Fracturing,” 102th Korean Society of Mineral and Energy Resources Engineers Conference, Daejeon, Korea, 17-18 April

## HONORS AND AWARDS

Stanford Graduate Fellowship	2021-New
Korea Government Scholarship for Overseas Study	2018-2020
Brain Korea 21 Plus Scholarship	2014-2015
Korea Energy and Mineral Resources Engineering Program Scholarship	2014-2015
Korea National Oil Corporation Scholarship	2014
National Scholarship for Science and Engineering	2007–2012

## SKILLS

Computer language: C++, Java, Matlab, VBA, C#, C, Fortran, Python, Processing, OpenMP, CUDA  
Software: AD-GPRS, Petrel, Intersect, SLB Eclipse, Kinetix, Ocean, GMRS, IX-Modelbuilder, GEOSX, GMSH, Deal.II, Ansys, Paraview, SGEMS, MFrac, Aspen Hysis, OLGA, PHAST, Autocad, Freecad, Solidworks, Catia, Latex, Tecplot, PBS Torque, Slurm  
Development Tool: Visual Studio, Eclipse, QT Creator, VIM, Sublime Text, Pico, GIT  
OS: Linux, Windows