

RESEARCH AREA

- Developer of [CCSNet.ai](#) web application: a deep learning modeling suite for CO₂ storage
- CO₂-water multiphase flow numerical simulation for CO₂ geological storage
- ML based simulator alternative for fast predictions of multiphase flow
- Plume migration analysis and probability assessment for CO₂ storage

EDUCATION

- Doctor of Philosophy in Energy Resource Engineering*** 2018 – Present
School of Earth, Energy & Environmental Science | Stanford University, United States
Advisor: Sally M. Benson
Committee member: Hamdi Tchelepi, Louis Durlofsky
- Master of Science in Environmental Fluid Mechanics and Hydrology*** 2016 – 2017
Civil and Environmental Engineering | Stanford University, United States
Advisor: Peter K. Kitanidis
- Bachelor of Applied Science and Engineering*** 2011 – 2016
Lassonde Mineral Engineering | University of Toronto, Canada
Engineering Business Minor, Graduate with Honour

PUBLICATION

Wen, G., Li, Z., Azzadenesheli, K., Anandkumar, A., Benson, S. *U-FNO—An enhanced Fourier neural operator-based deep-learning model for multiphase flow*. *Advances in Water Resources* (2022) doi: <https://doi.org/10.1016/j.advwatres.2022.104180> (News coverage: [Nvidia](#))

Wen, G., Hay, C., Benson, S. *CCSNet: a deep learning modeling suite for CO₂ storage*. *Advances in Water Resources* (2021) doi: <https://doi.org/10.1016/j.advwatres.2021.104009>

Wen, G., Tang, M., Benson, S. *Towards a predictor for CO₂ plume migration using deep neural networks*. *International Journal of Greenhouse Gas Control* (2021) doi: <https://doi.org/10.1016/j.ijggc.2020.103223>

Wen, G., & Benson, S. *CO₂ plume migration and dissolution in layered reservoirs*. *International Journal of Greenhouse Gas Control* (2019) doi: [10.1016/j.ijggc.2019.05.012](https://doi.org/10.1016/j.ijggc.2019.05.012)

TEACHING AND WORKING EXPERIENCE

- ExxonMobil Emerging Energy Fellow** | Stanford University, United States 2017 – Present
- Modeling for probabilistic assessments and site selection for ExxonMobil soft sediments project at the Gulf Coast
- Lecture Instructor** | Stanford University, United States Fall 2020, Spring 2022
- ENERGY 153/253: Carbon Capture and Sequestration. Designed course material and instructed lectures on the numerical simulation of CO₂ plume migration; trapping mechanisms and long term fate; machine Learning and CO₂ plume prediction.
- Teaching Assistant** | Stanford University, United States Fall 2019
- ENERGY 153/253: Carbon Capture and Sequestration

Gege Wen
gegewen@stanford.edu

Engineering Co-op Student | Husky Energy Inc., Canada 2014–2015
▪ Managed water–flooding projects in the north Alberta heavy oil and gas production

Engineering Intern | China Minmetals Non-Ferrous Metals Co. Ltd, China Summer 2013
▪ Reviewed the environmental impact study for the Glencore Xstrata Las Bambas Copper Mine bidding project

INVITED TALKS

ML-Seminar, *U-FNO - An enhanced Fourier neural operator-based deep-learning model for multiphase flow*. Purdue University April, 2022

Data Science Seminar, *U-FNO - an enhanced Fourier neural operator based-deep learning model for CO₂ storage*, Beyond Limits Sept, 2021

ML Seminar. *U-FNO - an enhanced Fourier neural operator based-deep learning model for multiphase flow*. ExxonMobile Aug, 2021

Special Webinar. *CCSNet - A Deep Learning Modeling Suite for CO₂ storage*. Microsoft Azure July, 2021

Modeling Forum. *CCSNet - A Deep Learning Modeling Suite for CO₂ storage*. Lawrence Berkeley National Laboratory May, 2021

CCS Seminar. *CCSNet - A Deep Learning Modeling Suite for CO₂ storage*. ExxonMobile May, 2021

SELECTED PRESENTATIONS

GEOSX Annual conference, *CCSNet - A Deep Learning Modeling Suite for CO₂ storage*. Stanford University June, 2022

Machine Learning and Big Data in Porous Media. *U-FNO - an enhanced Fourier neural operator-based deep-learning model for multiphase flow*. InterPore Annual Meeting June, 2022

Energy Solutions Week. *CCSNet - A Deep Learning Modeling Suite for CO₂ storage*. Stanford University. News coverage: [Stanford Daily](#) May, 2022

Application of Multimodal Physics-Informed Machine Learning/Deep Learning in Subsurface Flow and Transport Modeling, *CCSNet II: an advanced machine learning modeling suite for CO₂ storage in anisotropic and heterogeneous media*. AGU Fall Meeting Dec, 2021

Stanford Center for Carbon Storage Annual Affiliates Meeting. *U-FNO - An enhanced Fourier neural operator-based deep-learning model for multiphase flow*. Stanford University Oct, 2021

Special SCCS webinar: *CCSNet.ai Web App Launch*. Stanford University Oct, 2021

Advances in Machine Learning Algorithms in Geosciences and Reservoir Engineering Applications. *CCSNet - A Deep Learning Modeling Suite for CO₂ storage*. MMLDT-2021, San Diego Sept, 2021

Gege Wen

gegewen@stanford.edu

- Machine Learning and Big Data in Porous Media. *CCSNet - A Deep Learning Modeling Suite for CO₂ storage*. InterPore Annual Meeting May, 2021
- Stanford Center for Carbon Storage Annual Affiliates Meeting. *Reservoir scale CO₂ plume migration prediction with deep neural network*. Stanford University Nov, 2020
- Stanford Center for Carbon Storage Annual Affiliates Meeting. *Multiphase Flow Prediction with Deep Neural Network*. Stanford University Nov, 2019

HONOR AND SCHOLARSHIP

- ExxonMobil Emerging Energy Fellow** | Stanford University, United States 2019 – Present
- Best Project Award** | CS231N CNN for Visual Recognition, Stanford University, United States 2019
- Best Poster Award** | CS230 Deep Learning, Stanford University, United States 2018
- Grads to Watch** | University of Toronto, Canada 2016
- Lassonde Scholarship** | University of Toronto, Canada 2013 – 2014

ACADEMIC SERVICE

Conference Convener

- AAAI Fall Symposium (2022). Session: *AI and Climate Change*
- Goldschmit Conference (2022). Session: *Artificial Intelligence approach to multiscale geochemical processes: from molecular- to field-scale*
- AGU Fall Meeting (2021). Session: *Application of Multimodal Physics-Informed Machine Learning/Deep Learning in Subsurface Flow and Transport Modeling*

Journal Reviewer

- Computer & Geoscience
- Journal of Computational Physics
- Journal of International Greenhouse Gases Control

Conference and Grants Reviewer

- Climate Change AI Innovation Grants 2021
- ICML 2021 workshop: *Tackling Climate Change with Machine Learning*
- NeurIPS 2021 workshop: *Tackling Climate Change with Machine Learning*
- ICLR 2021 workshop: *Deep Learning for Simulation*
- NeurIPS 2020 workshop: *Tackling Climate Change with Machine Learning*
- NeurIPS 2019 workshop: *Tackling Climate Change with Machine Learning*