ABHISHEK D. BIHANI

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Graduate Researcher with experience in Data Science, Computer Vision, and Machine / Deep Learning

EDUCATION

The University of Texas at Austin, USA

Ph.D. in Petroleum Engineering | GPA: 3.70/4 — May 2020 (defense passed)

M.S. in Petroleum Engineering | GPA: 3.81/4 — May 2016

Areas of Focus: Subsurface Machine / Deep Learning, Digital Rock Physics, Porous Media Flow Simulations

Udacity

Nanodegree in Computer Vision — February 2020

Maharashtra Institute of Technology, University of Pune, India

B.E. in Petroleum Engineering | Grade: 73.98/100 (1st Class with Distinction) — May 2011

Honors: Silver Medalist (2nd rank)

GRE: 327/340 (scaled), TOEFL: 114/120, IELTS: 9.0/9.0

TECHNICAL SKILLS

Python (NumPy, SciPy, Pandas, Scikit-learn, Matplotlib, OpenCV, PyTorch, TensorFlow, XGBoost), MATLAB, C++ (Palabos), MySQL, Tableau, SPSS, Git, Bash

KEY PROJECTS

Semantic segmentation of mudrock electron microscope images

Constructed Digital Rock Physics and Deep Learning (Deeplab-v3+ with TensorFlow) based image processing and segmentation workflows to identify features like pores, silt, and clay from scanning electron microscope (SEM) images with > 90% pixel-accuracy.

Synthetic NMR Well-log Construction using Machine Learning

Generated a workflow for synthetic reconstruction of a missing nuclear magnetic resonance (NMR) well log from other well logs at a Gulf of Mexico location, through feature engineering, time-series analysis techniques, and multivariate polynomial regression modeling using the Scikit-learn library to increase the training R^2 value from 0.26 (multivariate linear regression) to 0.54.

Multiphase LBM Toolbox: Permeable media analysis using the Palabos library and in-house codes

Co-developed a simulation software for modeling multiphase flows and calculating petrophysical properties in complex porous geometries using the Palabos library for lattice Boltzmann (LBM) simulations.

RELEVANT EXPERIENCE

Graduate Researcher – The University of Texas at Austin — **August 2014 – Present**

- Combined pore network modeling, deep learning aided image analysis, and lattice Boltzmann simulations to study the structure of mudrock seals and showed that correlated heterogeneity enhances flow of CO_2/hydrocarbons by publishing results in 1 peer-reviewed journal and 4 conferences.

Reservoir Engineer – Oil India Limited — **October 2011 – July 2014**

- Collaborated in a massive, multi-disciplinary reservoir and well-level analysis for 500+ wells by statistical analysis and modeling to make recommendations which led to 3000+ barrel/day rise in oil production (annual projected revenue of ~ 65 million USD).
- Built a non-linear multivariate regression model for prediction of crude oil viscosity behavior ($R^2 = 0.57$) using experimental data from 162 wells.

Summer Intern – Essar Oil Limited — **June 2010 – July 2010**

- Conducted history matching, production forecasting and sensitivity analysis by the Monte Carlo method on 10 coal-bed methane wells to reduce uncertainty in input data by ~ 5%.

AWARDS AND LEADERSHIP

- Department of Petroleum and Geosystems Engineering Research Award — GAIN Conference Austin, 2019
- Statoil/Equinor Fellowship — UT Austin, 2016 – 2019
- Graduate Faculty Selection Committee — UT Austin, 2017 – 2019
- Presiding Officer – Dibrugarh Constituency, Indian Parliamentary Election — Election Commission of India, 2014
- Advanced Communicator Bronze / Competent Leader — Toastmasters International, 2011
- Vice President, Public Relations — Toastmasters Club of Pune – West, 2010 – 2011
- President — Society of Petroleum Engineers Student Chapter, 2010 – 2011