

ABHISHEK D. BIHANI, PH.D.

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Researcher experienced in Data Science, Machine/Deep Learning, and Computer Vision

EDUCATION

The University of Texas at Austin, USA

Ph.D. - Petroleum Engineering | GPA: 3.70/4

May 2020

M.S. - Petroleum Engineering | GPA: 3.81/4

May 2016

Areas of Focus: Subsurface Machine / Deep Learning, Computational Fluid Dynamics, Statistical Analysis

Maharashtra Institute of Technology, University of Pune, India

B.E. - 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, Pandas, Scikit-Learn, Matplotlib, OpenCV, PyTorch, TensorFlow, XGBoost, LightGBM, Featuretools, Hyperopt), C++ (Palabos, LIGGGHTS), MATLAB, AWS (SageMaker), MySQL, Analytics (Tableau, SPSS), Git, Bash

KEY PROJECTS

Home Credit Default Risk Recognition using Machine Learning

Created a machine learning pipeline for binary classification with automated feature engineering (connecting relational databases), comparison of multiple classifiers on imbalanced data, and automated hyperparameter tuning to achieve a test ROC AUC score of 0.786.

Synthetic NMR Well-log Construction using Machine Learning

Generated a workflow for synthetic reconstruction of a missing well log from other logs, through feature engineering, time-series analysis techniques, and multivariate polynomial regression (Scikit-learn) to increase training R^2 value from 0.26 (base-case) to 0.54.

Semantic segmentation of mudrock electron microscope images

Constructed conventional (MATLAB) and CNN-based (Deeplab-v3+ with TensorFlow) image processing and segmentation workflows to identify grain-scale features from scanning electron microscope (SEM) images with ~0.75 mean intersection over union.

Multiphase LBM Toolbox: Permeable media analysis using the Palabos

Co-developed and released an open-source simulation toolbox for modeling multiphase flows on high-performance computing (HPC) resources, and characterizing petrophysical properties of complex porous geometries using Palabos library (C++) and MATLAB.

ACADEMIC EXPERIENCE

Graduate Researcher – The University of Texas at Austin

August 2014 – May 2020

- **Ph.D. Research:** Used deep learning aided image analysis to segment and study mudrock images, and conducted flow simulations to examine risk of fluid leakage across mudrock seals by publishing results in journals, conferences, and a 266-page dissertation.
- **M.S. Research:** Investigated pore size distributions at Gulf of Mexico sites by reconstructing well logs for estimating thickness of gas hydrate accumulations using petrophysics and machine learning, and published results in conferences and a 101-page thesis.

INDUSTRY EXPERIENCE

Reservoir Engineer – Oil India Limited

October 2011 – July 2014

- Worked jointly with Finance Department to calculate reserve accretion and profits using scenario modeling and decline curve analysis predictions, which were reported to stockholders and the Indian Parliament for financial years 2012 and 2013.
- Collaborated in a multi-disciplinary reservoir analysis for 500+ wells by statistical analysis and reservoir modeling, and led the Improved Oil Recovery (IOR) team to make recommendations which increased oil production by 3000+ barrel/day.

PROFESSIONAL DEVELOPMENT

Certifications

- Nanodegree - Computer Vision
- Nanodegree - Machine Learning Engineer

Udacity, 2020

Udacity, 2020

Awards

- Department of Petroleum and Geosystems Engineering Research Award
- Advanced Communicator Bronze / Competent Leader

GAIN Conference Austin, 2019

Toastmasters International, 2011

Leadership & Teamwork

- Graduate Faculty Selection Committee
- Presiding Officer – Dibrugarh Constituency, Indian Parliamentary Election
- Vice President, Public Relations
- President

UT Austin, 2017 – 2019

Election Commission of India, 2014

Toastmasters Club of Pune – West, 2010 – 2011

Society of Petroleum Engineers Student Chapter, 2010 – 2011