ASHISH KUMAR LOOMBA

RESEARCHER

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Data Professional with a Ph.D., competent in using programming languages such as Python and MATLAB for completing both professional and personal projects. Possesses expertise in utilizing Tableau for data visualization, enabling effective communication of insights.

Skilled in optimizing return on investment from oil fields through advanced data analysis, visualization, and optimization techniques.

Experienced in working across diverse backgrounds and countries, showcasing strong stakeholder management abilities. Adept at storyboarding data to facilitate successful research paper publications.

TOOLS

- Python
- Github
- SQL
- Tableau
- MATLAB
- ECLIPSE
- PETREL
- EHM
- FracPro
- MRST
- CMG

AREAS OF INTEREST

- Sustainability
- Energy sector
- Data analysis
- Machine Learning
- Optimization
- Algorithm development

CURRICULUM VITAE

CURRENT ROLE

Postdoctoral researcher
NTNU - Norway
Nov 2023 to Ongoing

- Spearheading water management research at SUBPRO-Zero for net-zero emissions, collaborating with industry leaders.
- Developing real-time decision-support methods for the water value chain, utilizing integrated modeling and numerical optimization techniques, contributing to the mission of achieving net-zero emissions in the energy sector.

PRIOR EXPERIENCES

Researcher (Machine Learning)
Recod.ai - Brazil
Feb 2023 to Nov 2023

- Developed futuristic simulation scenarios by integrating data-driven and physics-based models.
- Led the development of a new algorithm based on supervised learning to reliably forecast features for an oil field using minimal data.
- Collaborated with key stakeholders to align project roadmaps with organizational goals.
- Provided consultation and guidance to team members on engineering operations within the energy sector, leveraging data-driven insights and industry best practices.

Researcher
Universidade Estadual de Campinas (UNICAMP) - Brazil
Sept 2017 to January 2023

- Developed a novel metaheuristic optimization algorithm (CLEO) that utilizes cluster-based manipulation to efficiently optimize large problem spaces with multiple decision variables.
- Conducted a comparative analysis of the optimization algorithm against well-established algorithms such as differential evolution (DE) and particle swarm optimization (PSO), demonstrating its effectiveness and superiority.
- Presented novel methodologies that significantly accelerated the optimization process by up to 15 times, while highlighting the importance of temporal and spatial boundary conditions.
- Developed a risk-informed and feedback-based workflow incorporating multidisciplinary tasks to optimize multiple project objectives.

RELEVANT PROJECT EXPERIENCE

Credit Risk Assessment
Conducting data analysis and developing credit scoring models incorporating variables such as income, employment history, and more to assess credit risk. Focused on identifying patterns and anomalies within the data that could indicate fraudulent activities. Working towards improving accuracy and efficiency in credit risk assessment through advanced data analysis techniques and machine learning algorithms.

CLEO Algorithm Development
Working towards developing a Python library to implement CLEO, a novel optimization algorithm designed for solving large-scale optimization problems.

Recently Published Papers in Journals

Machine Learning Inspired Workflow to Revise Field Development Plan under Uncertainty
Journal: Petroleum Exploration and Development (Elsevier)
Published: 2023
Journal Ranking: Q1 (Scopus)

Cluster-Based Learning and Evolution Algorithm for Optimization
Journal: Geoenergy Science and Engineering (Elsevier)
Published: April 26, 2023
DOI: 10.1016/j.geoen.2023.211801
Journal Ranking: Q1 (Scopus)

A Comparative Study to Accelerate Field Development Plan Optimization
Journal: Journal of Petroleum Science and Engineering (Elsevier)
Published: Oct 23, 2021
DOI: 10.1016/j.petrol.2021.109708
Journal Ranking: Q1 (Scopus)

Application of Risk-Informed Closed-Loop Field Development Workflow to Elucidate the Evolution of Uncertainties
Journal: Journal of Petroleum Science and Engineering (Elsevier)
Published: Sep 23, 2020
DOI: 10.1016/j.petrol.2020.107960
Journal Ranking: Q1 (Scopus)

PRIOR EXPERIENCES

- Applied machine learning techniques, specifically using random forest regression analysis, to enhance feedback-based workflows, resulting in increased efficiency for real-world applications.
- Introduced a "bottom-up analysis" approach that leverages the power of data analysis to identify failure reasons in predictions within feedback-based workflows.
- Utilized advanced data analysis techniques to analyze and interpret feedback data, providing valuable insights for continuous improvement and optimization of workflows.
- Studied the impact of simulation model fidelity on the essential objective functions of the field, uncovering valuable insights for improving simulation accuracy.

Graduate Research And Teaching Assistant
Universiti Teknologi PETRONAS (UTP) - Malaysia
Jul 2016 - May 2017

- Worked on the Alpha Matrix project, a groundbreaking initiative centered around well-technology advancements utilizing electromagnetics.
- Conducted studies to explore the electromagnetic control of oil flow, incorporating the use of Alpha Matrix Nanofluid.
- Performed a feasibility study to investigate the potential of magnetic nanoparticles for enhanced oil recovery.

Graduate Petroleum Engineer (Subsurface)
Fenix Consulting Delft- The Netherlands
Aug 2015 - Mar 2016

- Worked on the Induced Seismicity project, focused on gaining insights into the behavior and prediction of subsurface phenomena.
- Collaborated on subsurface consultancy projects for unconventional reservoirs, tight formations, and Coal-bed Methane (CBM). Conducted extensive data analysis to understand subsurface dynamics and develop efficient resource extraction strategies in challenging geological environments.

EDUCATION

Universidade Estadual de Campinas (UNICAMP), Brazil
2018 to 2022
Ph.D. in Petroleum Sciences and Engineering

Technische Universiteit Delft (TU Delft), The Netherlands
2013 to 2015
Master of Sciences (MSc) Applied Earth Sciences

Birla Institute of Technology & Science- Pilani (Dubai Campus)
2007 to 2011
Bachelor of Engineering (Hons.)- Electrical & Electronics