

University of Toronto JOB POSTING – POSTDOCTORAL FELLOW

Date: May 27, 2024

Number of Positions available: 2

Postdoctoral Fellowships in Artificial Intelligence, Data Science, Geospatial and Mathematical Modelling of Methane Emissions from Alberta Oil Sands at the University of Toronto, Canada

Background

Greenhouse gas (GHG) emissions from the oil sector in Alberta total about 70 million tonnes annually, with a significant portion deriving from methane biogenesis by bacteria in oil sands tailings ponds and end-pit lakes. Methane accounts for 14% of Canada's greenhouse gas emissions. This methane is reshaping ecosystems, causing adaptation challenges for inhabitants, and leading to new disease emergence. Therefore, it is urgent to improve the accuracy of detecting, quantifying, and localizing methane emissions.

The Artificial Intelligence and Mathematical Modelling Lab (AIMMLab) (<https://aimmlab.org/>) directed by Prof. Jude Dzevela Kong at the University of Toronto, Canada, receives support from an awarded NSERC Alliance Missions project "Predicting Methane Emissions from Alberta Oil Sands Territories Using a Holistic Model and Monitoring System" (PI: Prof. Hao Wang at the University of Alberta) to hire two postdoctoral research fellows in AIMMLab. The team will join forces with the Interdisciplinary Lab for Mathematical Ecology & Epidemiology (ILMEE) (<https://sites.google.com/uAlberta.ca/ilmee/home>) directed by Prof. Hao Wang at the University of Alberta, Canada, as well as the South African Consortium of Air Quality Monitoring (SACAQM) and University of the Witwatersrand, South Africa (<https://www.sacaqm.org/>) to develop and deploy Artificial Intelligence, Data Science Geospatial and Mathematical methodologies and technologies for Methane emission. The methodologies and technologies would be deployed to mitigate fugitive unburned methane; improved accuracy of detection, quantification, and localization of methane emissions in the oil and gas sector for effective design of mitigation solutions; reduce uncertainties in methane emissions measurement and quantification; improved approaches for timely reporting of emissions data to track the performance of producers' emission reduction initiatives and provide actionable information to stakeholders.

Job description

We are seeking two Post-Doctoral Fellows to join AIMMLab and contribute to NSERC-sponsored anthropogenic greenhouse gas research. The successful candidates will design and deploy Artificial Intelligence, Data Science, Geospatial, and Mathematical methodologies to mitigate fugitive unburned methane; improve the accuracy of detection, quantification, and localization of methane emissions in the oil and gas sector; reduce uncertainties in methane emissions measurement and quantification; and enhance approaches for timely reporting of emissions data to track the performance of producers' emission reduction initiatives and provide actionable information to stakeholders. The exact projects that each successful applicant will undertake will be determined in discussion with the team, taking into account the applicants' interests and experience.

Application instructions:

Interested candidates should contact Prof. Jude Dzevela Kong (jude.kong@utoronto.ca) with a CV, statement of interest and contact details of two referees that will be contacted directly after the interviews. The positions will remain open till they filled with contracts starting as soon as possible.

Salary: At least \$50,000 + benefits

Person specification:

- 1) Research experience of working with artificial intelligence and /or data science and/or mathematical models.
- 2) Ability to collect and analyze data, interpret and present results to a high standard using a range of specialized research techniques.
- 3) Ability to translate scientific publications and patents into practical insights for research and strategic decision-making.
- 4) Good knowledge of python/MATLAB/R programming language.
- 5) Excellent verbal and written communication skills.
- 6) Experience in communicating research findings to a non-specialist audience.
- 7) Ability to work independently but also as part of a larger interdisciplinary research team.
- 8) PhD in one of the following areas obtained within 5 years from hiring: engineering, mathematics, statistics, physics, computer science or a similarly quantitative discipline.

Closing date: July 31, 2024 or until filled

Supervisor: Jude Kong

Term: One year with the possibility of extension

FTE: The normal hours of work are 40 hours per week for a full-time postdoctoral fellow (pro-rated for those holding a partial appointment) recognizing that the needs of the employee's research and training and the needs of the supervisor's research program may require flexibility in the performance of the employee's duties and hours of work.

Employment as a Postdoctoral Fellow at the University of Toronto is covered by the terms of the CUPE 3902 Unit 5 Collective Agreement.

This job is posted in accordance with the CUPE 3902 Unit 5 Collective Agreement.

The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from racialized persons / persons of colour, women, Indigenous / Aboriginal People of North America, persons with disabilities, LGBTQ persons, and others who may contribute to the further diversification of ideas.