



岩土力学与工程前沿讲坛

Forum on Geomechanics and Geo-engineering

No.SK2023-37

应岩土力学与工程国家重点实验室邀请，加拿大阿尔伯塔大学 Chengkai Fan 来访交流并做学术报告，报告信息如下：

报告人
Lecturer

Chengkai Fan

报告题目
Theme

Applying machine learning techniques to improving truck productivity prediction accuracy at mine sites

报告时间
Time

2023 年 10 月 11 日 (周三) 上午 9:30

报告地点
Spot

武汉岩土所研发大楼 11 楼学术交流室

欢迎广大科研人员及研究生参加！

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报告摘要

Alberta's oil sands mining has contributed nearly \$13 billion to the Canadian economy and over 228,000 nationwide jobs in 2017 alone. In oil sands mining, the productivity of truck haulage (i.e., truck productivity) is of great interest to mining industries because it affects a mine's production, planning, income, and cost. This research processes a wealth of data from various sources, such as installed sensors, wireless communication, remote sensing, and other acquisition systems. Based on these data, machine learning techniques are employed to better understand and predict truck productivity, which helps make sound mine planning and budget decisions at mine sites. This research (1) provides a new insight to handle the massive amounts of truck haulage data with multi-peak Gaussian distributions. (2) A unified toolkit is developed based on machine learning models to estimate truck productivity at varying temporal resolutions. The fundamental understanding of the significant relationships between truck productivity and influential factors (e.g., extreme weather conditions) will guide strategic planning and cost reduction of the mining operation. Moreover, (3) the knowledge and experience gained from this research will be applied to other open-pit mine sites using truck haulage, which will broaden the application of machine learning in the resource industry and drive the "Next Generation of Mining" in Alberta and Canada.

报告人介绍



Chengkai Fan is a Ph.D. at the Department of Civil and Environmental Engineering, University of Alberta, Canada. He holds a B.S. in geological engineering from the Anhui University of Science and Technology, China (2016) and an M.S. in geotechnical engineering from the University of Chinese Academy of Sciences, China (2019). His research focuses on CO₂ storage, rock mechanics and core flooding, fiber optic technology, and machine learning applications in geotechnical and mining engineering.