

Machine Learning (ML) in Data-Driven 3D Printing Process Optimization

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Research Area: Material Innovation, Process Optimization, Data Science, Data Analytics, Machine Learning

Project Description:

Data-driven modeling in material science rose to prominence in the last decade, and various supervised and unsupervised machine learning techniques have been employed for material development, properties prediction, interpreting extracted information from data, and deriving insights for decision-making purposes. In this context, machine learning can have prominent importance in the field of 3D printing of advanced hydrogel material for accelerated process optimization and print quality predictions. In the past decade, our research center, Toronto Smart Materials & Structures (TSMART) lab at University of Toronto in collaboration with industrial partners has developed advanced printing systems and material preparation strategies for numerous cutting-edge applications namely microelectronics, energy storage devices, and healthcare monitoring devices. We are looking for passionate candidates to join our team for our ongoing project on development of a machine learning (ML) platform for data-driven modeling and process optimization using a state-of-the-art 3D printer. As the ultimate goal of this project, a machine learning platform is to be developed which can be used for prediction of print qualities given a wide range of process parameters. The research will be performed in TSMART lab in collaboration with outstanding researchers in MIE, MSE and BME departments. By joining our team, you will have the opportunity to perform research in our state-of-the-art research labs in Canada, expand your lab skills, and fortify your academic resume by having contribution in academic publications.

Interested candidates should contact Prof. Hani E. Naguib (naguib@mie.utoronto.ca) for more information.