



**COLLEGE OF ENGINEERING
AND COMPUTER SCIENCE**
FLORIDA ATLANTIC UNIVERSITY

Announces the Ph.D. Dissertation Defense of

Divya Gangwani

for the degree of Doctor of Philosophy (Ph.D.)

“Machine Learning to Predict Business Success: Theories, Features and Models”

Oct 31, 2024, Thursday. Time 1.00 pm – 2:15 pm Eastern Standard Time.

Zoom link: <https://zoom.us/j/5618090648/>

Password: t*q3WF

Boca Raton, FL

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ABSTRACT OF DISSERTATION

MACHINE LEARNING TO PREDICT BUSINESS SUCCESS: THEORIES, FEATURES AND MODELS

Businesses are the driving force behind economic systems and are the lifeline of the community as they help in the prosperity and growth of the nation. Hence it is important for the business to succeed in the market. Business success provides economic stability and sustainability that helps preserve resources for future generations. The success of a business is not only important to the owners but is also critical to the regional/domestic economic system, or even the global economy. Recent years have witnessed many new emerging businesses with tremendous success, such as Google, Apple, Facebook etc., yet millions of businesses also fail or fade out within a rather short period of time. Finding patterns/factors connected to the business rise and fall remains a long-lasting question puzzling many economists, entrepreneurs, and government officials. Recent advancements in artificial intelligence, especially machine learning, has lend researchers powers to use data to model and predict business success. However, due to the data-driven nature of all machine learning methods, existing approaches are rather domain-driven and ad-hoc in their design and validations, particularly in the field of business prediction. The main challenge of business success prediction is twofold: (1) Identifying variables for defining business success; (2) Feature selection and feature engineering based on three main categories Investment, Business and Market, each of which is focused on modeling a business from a particular perspective, such as sales, management, innovation etc. This dissertation mainly focuses on developing a framework that will aim at providing extensive features by using feature engineering and feature extraction techniques related to Investment, Business and Market angles for forecasting business success. More specifically, the following two problems will be studied to predict success based on three different perspectives: (1) To create a triangular framework known as IBM (Investment, Business and Market) triangle based on important factors relevant to business success. (2) To create a modeling framework using machine learning models to predict the business outcome as a binary classification task. (3) To capture deep relations between different business entities using Graph-based learning algorithms and predict business success.

BIOGRAPHICAL SKETCH

Born in India,

B.S., G.H Rasoni Engineering College, Nagpur, India, 2013

M.S., University of Houston Clear Lake, Houston, Texas, 2016
Ph.D., Florida Atlantic University, Boca Raton, Florida, 2024

CONCERNING PERIOD OF PREPARATION
& QUALIFYING EXAMINATION

Time in Preparation: 2020 - 2024

Qualifying Examination Passed: Fall 2020

Published Papers:

1. Divya Gangwani, Qianxin Liang, Shuwen Wang, and Xingquan Zhu. "An empirical study of deep learning frameworks for melanoma cancer detection using transfer learning and data augmentation." In 2021 IEEE International Conference on Big Knowledge (ICBK), pp. 38-45. IEEE, 2021
2. Gangwani, Divya, Xingquan Zhu, and Borko Furht. "Exploring investor-business-market interplay for business success prediction." *Journal of big Data* 10.1 (2023): 48.
3. Gangwani, Divya, and Xingquan Zhu. "Modeling and prediction of business success: a survey." *Artificial Intelligence Review* 57.2 (2024): 44.