بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

ENHANCING CELL-PHONES' RECEIVED SIGNAL STRENGTH PREDICTION USING DEEP LEARNING

By

AMR SALEH FOUAD HUSSEIN NASSAR

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Electronics and Communications Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

ENHANCING CELL-PHONES' RECEIVED SIGNAL STRENGTH PREDICTION USING DEEP LEARNING

Key Words:
Machine Learning; Reference Signal Strength; Telecom Optimization; Channel Model; Internet of Things

Summary:

While mobile operators invest in providing the best quality of service (QOS) to its customers, a live visibility on the actual QOS at the customer end is often needed. Mobile operators rely on drive test to measure QOS at user level thus identify the service level. When this visibility is inaccurate or not live, detecting and acting on customer problems can take lengthy timeframes. The thesis proposes machine learning models using huge historical dataset collected from actual filed readings to predict the QOS received at the customer level indifferent locations. Five ML approaches are examined, and the results were compared to identify the ML model that can offer higher prediction accuracy for QOS. Then Clustering ML model was built to divide the coverage area into small areas such that probe devices can be used to collect field readings from specific locations to improve the predictive model.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Amr Saleh Fouad Hussein Nassar Date: / /2021

Signature:

Dedication

I dedicate this thesis, with deep respect and great love, to my parents. You not only gave me the gift of life, but an unrelenting passion to live it fully. For that I am very grateful.

Acknowledgments

First of all, I would like to thank God - The Provider- the one whose blessings and giving upon me is uncountable. This thesis would not have been accomplished if it was not for the help of my professor Prof. Mohsen A Rashwan, I cannot express enough thanks and gratitude for his support, encouragement, and guidance. Finally, I’d like to present a special thanks to my parents for everything.

Table of Contents

List of Tables