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

OPTIMIZING DATA RATE OVER HYBRID FSO/MMWAVE LINK IN HIGH ALTITUDE C-RAN MOBILE NETWORK ARHITECTURE

By

Nagwa Ibrahim Mohammed Attya

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 Electrical Communication Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Approved by the
Examining Committee

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Title of Thesis:

Optimizing data rate over Hybrid FSO/mmWave Link in High Altitude C-RAN Mobile Network Architecture

Key Words:
Free Space Optics; Millimeter Wave; Cloud Radio Access Network; Integral Linear Programming Optimization; High Altitude Balloon

Summary:

In this thesis, a C-RAN architecture where a hybrid transmission technology FSO/mmWave channel is used to transport the fronthaul between the RRHs and the cloud of BBUs.
The reason behind this assumption is to control the hand over between FSO and mmWave channels in case of failure as a result of weather conditions. To achieve a maximum sum data rate in this C-RAN architecture, we optimize hand over process using ILP programming.
Simulations show the potential of a hybrid FSO/mmWave channel in counteracting the effects of weather conditions. The model can be modified to consider the case where both FSO and mmWave channels are used concurrently to achieve a certain data rate for a particular case.

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: Nagwa Ibrahim Mohamed Attya Date: / /2021

Signature:

Dedication

The researchers would like to dedicate this research study to their families who supported them to conduct this research study, for the teachers who help and guide them to make a final output and for the future researchers who can use this study as their guide or reference

Acknowledgments

First of All, I need to thank and praise Allah Subhana Wa Tallah who granted me the health and the knowledge to finish this work.

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Nagwa Ibraim

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