

**USING NEURAL NETWORKS  
FOR  
INITIAL DESIGN DECISIONS IN BUILDINGS**

THIS THESIS WAS SUBMITTED TO THE DEPARTMENT OF  
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## **ABSTRACT**

With the development of mathematics and ability to process symbols as opposed to numbers in computer technology, the artificial intelligence applications developed rapidly. Artificial Neural Networks (ANN) and Case Based Reasoning (CBR) are some of examples for the developed tools. Here we are trying to use ANN application in Structural Design as a prediction tool for arriving at column spacing and sizing in multistory buildings, based on historical examples. The trained back propagation networks were used to establish the significance of the required result.

## **KEYWORDS**

Artificial Neural Networks, Preliminary design, Column Spacing, Column Sizing, Significance Testing, Sensitivity analysis.

## Declaration

I certify that this dissertation does not incorporate without acknowledgement any material previously submitted for a degree in any University to the best of my knowledge and believe that it does not contain any material previously published, written or orally communicated by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for inter-library loans, and for the title and summary to be made available to outside organizations.

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## Table of Content

<b>CHAPTER 1</b> .....	<b>1</b>
<b>1. INTRODUCTION</b> .....	<b>1</b>
1.1. RESEARCH OBJECTIVES .....	1
1.2. LITERATURE REVIEW ON SIMILAR WORK DONE ELSEWHERE .....	2
1.2.1. <i>Work done by Molkdar D</i> .....	2
1.2.2. <i>Work done by Seidel Scott</i> .....	2
1.2.3. <i>Work done by Turkmani A. M. D. and Toledo A. F.</i> .....	3
1.2.4. <i>Work done by Hushemi H</i> .....	4
1.3. BASICS OF RADIO WAVE SIGNAL PROPAGATION .....	4
1.4. RADIO WAVE PROPAGATION MECHANISMS .....	5
1.5. FADING .....	6
1.5.1. <i>Small scale fading</i> .....	6
1.5.2. <i>Factors influencing small-scale fading</i> .....	7
1.5.3. <i>Large-scale fading</i> .....	8
1.5.4. <i>Path loss</i> .....	8
1.5.5. <i>Two ray model</i> .....	9
1.5.6. <i>Diffraction</i> .....	12
1.5.7. <i>Knife-edge diffraction model</i> .....	13
1.5.8. <i>Scattering</i> .....	14
1.6. OUTDOOR PROPAGATION MODELS .....	15
1.6.1. <i>Okumara model</i> .....	15
1.6.2. <i>Hata model</i> .....	16
1.7. INDOOR PROPAGATION MODEL .....	18
1.7.1. <i>Partition losses (same floor)</i> .....	18
1.7.2. <i>Partition losses (between floors)</i> .....	19
1.8. DOPPLER SHIFT .....	20
<b>CHAPTER 2</b> .....	<b>21</b>
<b>2. METHODOLOGY</b> .....	<b>21</b>
2.1. RESOURCE REQUIREMENT .....	22
2.1.1. <i>Outdoor installation measurements</i> .....	22
2.1.2. <i>Indoor installation measurements</i> .....	23
<b>CHAPTER 3</b> .....	<b>24</b>
<b>3. MEASUREMENTS AND OBSERVATIONS</b> .....	<b>24</b>
3.1. INDOOR SIGNAL STRENGTH MEASUREMENTS FOR AN OUTDOOR ANTENNA INSTALLATION .....	24
3.2. INDOOR SIGNAL STRENGTH MEASUREMENTS FOR AN INDOOR ANTENNA INSTALLATION .....	26

<b>CHAPTER 4</b> .....	<b>28</b>
<b>4. ANALYSIS</b> .....	<b>28</b>
4.1. OUTDOOR INSTALLATION, FLOOR ATTENUATION FACTOR AND PATH LOSS EXPONENT ANALYSIS .....	28
4.1.1. <i>Analysis with literature surveyed model parameters</i> .....	28
4.1.2. <i>Optimizing the parameters</i> .....	29
4.1.3. <i>Comparison of results</i> .....	30
4.2. INDOOR INSTALLATION, PARTITION ATTENUATION FACTOR AND PATH LOSS EXPONENT ANALYSIS .....	31
4.2.1. <i>Analysis with literature surveyed model parameters</i> .....	31
4.2.2. <i>Optimizing the parameters</i> .....	34
4.2.3. <i>Comparison of results</i> .....	38
<b>CHAPTER 5</b> .....	<b>40</b>
<b>5. CONCLUSION</b> .....	<b>40</b>
<b>6. RECOMMENDATIONS</b> .....	<b>41</b>
6.1. IMPROVEMENTS AND FUTURE WORK .....	41
6.1.1. <i>Graphical analysis</i> .....	41
6.1.2. <i>Starting value for the signal strength predicting software</i> .....	42



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## List of Figures

FIGURE 1: SMALL-SCALE AND LARGE-SCALE FADING.....	7
FIGURE 2: TWO RAY MODEL .....	10
FIGURE 3: VECTOR SUM .....	11
FIGURE 4: FRESNEL ZONE GEOMETRY .....	12
FIGURE 5: KNIFE-EDGE DIFFRACTION MODEL.....	13
FIGURE 6: MEDIAN ATTENUATION RELATIVE TO THE FREE SPACE ( $A_{\text{M}}(F, D)$ ).....	15
FIGURE 7: CORRECTION FACTOR, $G_{\text{AREA}}$ FOR DIFFERENT TYPES OF TERRAINS. ....	16
FIGURE 8: DOPPLER SHIFT .....	20
FIGURE 9: CROSS SECTION OF THE BUILDING AND MEASUREMENT LOCATIONS .....	25
FIGURE 10: FLOOR PLAN OF SIGNAL STRENGTH MEASURED LOCATIONS.....	26



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## List of Tables

TABLE 1:	SIGNAL STRENGTH MEASUREMENT AT DIFFERENT FLOORS (BCCII - 121, BS-70) .....	25
TABLE 2:	SIGNAL STRENGTH MEASUREMENT AT 20 LOCATIONS.....	27
TABLE 3:	CALCULATION WITH VALUES FROM LITERATURE.....	29
TABLE 4:	MINIMIZING THE MEAN OF DIFFERENCE BETWEEN THEORETICAL AND MEASURED VALUES. ....	30
TABLE 5:	COMPARISON OF PATH LOSS EXPONENT AND FLOOR ATTENUATION FACTORS .....	30
TABLE 6:	SAME FLOOR, SIGNAL STRENGTH MEASUREMENT DUE TO EACH ANTENNA WITH TYPICAL VALUES.....	31
TABLE 7:	MEAN OF DIFFERENCES AND STANDARD DEVIATIONS.....	34
TABLE 8:	RESULTS OF THE OPTIMUM PATH LOSS EXPONENT AND PARTITION ATTENUATION FACTOR.....	35
TABLE 9:	MEAN OF DIFFERENCE AND THE STANDARD DEVIATION .....	38
TABLE 10:	COMPARISON OF PATH LOSS EXPONENT AND PARTITION ATTENUATION FACTORS.....	38
TABLE 11:	COMPARISON OF RECEIVE SIGNAL STRENGTH AND CALCULATED WITH RESEARCHED PARAMETERS.....	39



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## **Abbreviations**

GSM – Global System for Mobile communication

BCCII – Broadcast Control Channel

BS – Base Station

FAF – Floor Attenuation Factor

PAF – Partition Attenuation Factor

AFM – Attenuation Factor Model

LOS – Line of sight

NLOS – Non line of sight

PCS – Personal Communication Systems

CW – Continuous Wave



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