TITLE OF MY THESIS ON A TOPIC OF AN INTERESTING AREA OF ENGINEERING

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A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of Bachelor of Science in Electrical, Electronic and Communication Engineering

DEPARTMENT OF ELECTRICAL, ELECTRONIC AND COMMUNICATION ENGINEERING
MILITARY INSTITUTE OF SCIENCE AND TECHNOLOGY
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APPROVAL CERTIFICATE

TITLE OF MY THESIS ON A TOPIC OF AN INTERESTING AREA OF ENGINEERING

B.Sc. Engineering Thesis

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TITLE OF MY THESIS ON A TOPIC OF AN INTERESTING AREA OF ENGINEERING

DECLARATION

We hereby declare that the study reported in this thesis entitled as above is our own original work and has not been submitted before anywhere for any degree or other purposes. Further we certify that the intellectual content of this thesis is the product of our own work and that all the assistance received in preparing this thesis and sources have been acknowledged and cited in the reference Section.

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I would also like to thank .... I would also like to extend my heartfelt gratitude to .... I also thank the ....

Finally, I must express my profound gratitude to ....

ABSTRACT

Title of My Thesis on a Topic of an Interesting Area of Engineering

Write the abstract of your work as an independent part of your thesis capturing the research problem and its significance, your contributions and its validation, and conclusions.

Horizontally Centered

Font: English - All 12 Times New
Bangla – 14 Sutonny OMJ

সারসংক্ষেপ

Eccentrically Loaded Strip Footing Resting on Sand Layer Overlying a Rigid Soil Stratum

Horizontally Centered

এই অভিসন্দর্ভে বালি দ্বারা গঠিত সসীম পুরুত্বের (finite thickness) মাটিস্তরের (soil layer) উপর বা অগভীরে স্থাপিত সরুপ্রস্থের (strip) ভিত বা পাদকাঠামোতে (footing) ভিন্নকেন্দ্রী বল (eccentric loading) প্রয়োগের ফলে অধঃস্থিত ভিতমাটিস্তরের (foundation soil) আচরণ সংশ্লিষ্ট গবেষণার ফলাফল বর্ণিত হয়েছে। গবেষণার মূল বিষয়সমূহ ছিল, ভিতমাটি স্তরের বল সহনক্ষমতা (bearing capacity), ভিতমাটির অভ্যন্তরীণ পীড়ন বিস্তরন (stress distribution), পাদকাঠামো তথা ভিতমাটির সংক্ষেপণশীলতা (settlement) ও হেলান-বিকৃতি (rotation) এবং অধঃস্থিত ভিতমাটিস্তরের অভ্যন্তরীণ বিকৃতির গতিপ্রকৃতি (kinematics of soil mass)। গবেষণার জন্য বিশেষভাবে নির্মিত একটি নমুনা আধার (model container or tank) নিয়ন্ত্রিতভাবে উচ্চ ঘনত্বের বালি দ্বারা পূর্ণ করতঃ নিদৃষ্ট তথা সসীম পুরুত্বের (finite thickness) ভিত মাটিস্তর তৈরি করা হয়, যার পুরুত্ব ছিল পাদকাঠামোর প্রস্থের ০.৫ থেকে ১.৫ গুনের মধ্যে। পাদকাঠামোর নীচের তলটি ছিল অমসৃণ (rough) এবং এর পরিমাপ এমন ছিল যে পাদকাঠামোর উপর বল প্রয়োগ করলে সরল বিকৃতির (plain strain) শর্তসমুহ পূর্ণ হয় । পাদকাঠামোটিতে বিকৃতি-নিয়ন্ত্রিতভাবে (strain controlled) বল প্রয়োগ করা হয়। ভিত মাটির অভ্যন্তরীণ বিকৃতি ও পাদকাঠামোর সংক্ষেপণশীলতা যথাক্রমেঃ লোডসেল (load cell) ও এলভিডিটি (LVDT) দ্বারা পরিমাপ করা হয়। ভিতমাটিস্তরের অভ্যন্তরীণ বিকৃতির গতিপ্রকৃতি পরিমাপের ক্ষেত্রে স্টেরিও-ফটোগ্রামেট্রিক (stereo-photogrammetric) পদ্ধতি অনুসরণ করা হয়। প্রাপ্ত ডাটাসমূহ বিশ্লেষণ করে দেখা যায় যে, ভিতমাটি স্তরের বল সহনক্ষমতা, ভিতমাটির অভ্যন্তরীণ পীড়ন বিস্তরন , ভিতমাটিস্তরের অভ্যন্তরীণ বিকৃতির গতিপ্রকৃতি মুলতঃ নমুনা আধার ও মাটিস্তরের মধ্যকার ইন্টারফেসের (interface) অমসৃণতার (roughness) উপর নির্ভরশীল। ডাটাসমূহ পুঙ্খানুপুঙ্খভাবে পর্যবেক্ষণ করে ভিতমাটিস্তরের বলবিদ্যা (mechanics) সম্পর্কে যে ধারণা পাওয়া যায় তার উপর ভিত্তি করে ভিতমাটি স্তরের বল সহনক্ষমতা নিরূপণের জন্য একটি নতুন তত্ত্ব (theory) প্রস্তাব করা হয়েছে।

Centered page number

LIST OF NOTATIONS

I	An input image
$\hat{I}$	An embedded version of the input image, I
M	Number of pixels in a row: $M \in \mathbb{N}$
N	Number of pixels in a column: $N \in \mathbb{N}$
NEW	ADD MORE, ADD YOURS

LIST OF TABLES

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CHAPTER 1

INTRODUCTION

1.1 Introduction

1.2 Literature Review

1.3 Research Motivation

1.4 Research Objectives

In light of the identified gap in the area of ..., the research presented in this thesis sets its primary goal to develop a ... as mentioned in the previous section. To carry out the project, the specific objectives of this work are outlined as follows.

a) To investigate the ...

b) To analyze the ...

c) To develop algorithms of ...

d) To develop an experimental setup for the ...

The expected outcome of this work is, therefore, a new ...

1.5 Organization of the Thesis

The remainder of this thesis is organized as follows.

Chapter 2 captures the background of the proposed research ...

Chapter 3 presents the proposed development of ...

Chapter 4 presents the evaluation of the proposed scheme for ...

Chapter 5 presents the conclusion of the thesis with a summary of the original contributions and future work.

CHAPTER 2

RELATED WORKS

2.1 Introduction

2.2 Method-I

A few references of earlier work is cited here [1, 2] to generate some entries in the Bibliography section.

2.3 Method-II

2.4 Chapter Summary

CHAPTER 3

PROPOSED SCHEME/METHOD/OWN WORK

3.1 Introduction

3.2 New Section Heading

3.2.1 Subsection-I heading

3.2.2 Subsection-II heading

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3.4 Chapter Summary

CHAPTER 4

RESULTS AND DISCUSSIONS

CHAPTER 5

CONCLUSIONS AND FUTURE WORKS

5.1 Conclusions

5.1.1 Research outcomes

5.1.2 Research significance

5.2 Future Works

LIST OF PUBLICATIONS

Journal Papers:

(i) **Authors-Lastname, F. N.** and Others-Lastname, F. N., "Article title," *Name of the Journal*, Publisher, 2019.

(ii) **Authors-Lastname, F. N.** and Others-Lastname, F. N., "Journal-Article title," *Name of the Journal*, Publisher, 2019. (under review)

Conference Papers:

(iii) **Authors-Lastname, F. N.** and Others-Lastname, F. N., "Conference paper title" *Proceedings title*, City of the conference, Country, Publisher, year, pp. xx-xx.

(iv) **Authors-Lastname, F. N.** and Others-Lastname, F. N., "Conference paper title" *Proceedings title*, City of the conference, Country, Publisher, year, pp. xx-xx.

(v) **Authors-Lastname, F. N.** and Others-Lastname, F. N., "Conference paper title" *Proceedings title*, City of the conference, Country, Publisher, year, pp. xx-xx.

REFERENCES

[1] G. H. Granlund and H. Knutsson, *Signal processing for computer vision*. Springer Science & Business Media, 1994.

[2] R. A. Jarvis, "A perspective on range finding techniques for computer vision," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, no. 2, pp. 122–139, 1983.

APPENDIX A

MATLAB CODES

A.1 An Example of MATLAB Script

```
clc
clear all
close all

%% Define the path of the test image for batch run
path = strcat(cd, '\TestImage\');
pathresult = strcat(cd, '\sResult\SIPIfull\');
contents = dir(path);

Method = [];

for F=1:numel(contents)-2
    filename = contents(F+2).name;
    I= imread(filename);

    load eqdata                 % the data bits to be embedded
    Io= double(I(:,:)); % original test input image
    Io(Io==0)=1;
    Io(Io==255)=254;

    [M, N] = size(Io);
    pxs =0;
    pdx =1;

    tic
    Iw = Io;
    x=1;
    for i=1:1:M
        for j=1:3:N-2
            if pdx +1 ≤ numel(eqdata)
                [ Iw(i,j:j+2), Iems(x:x+2, :), unusedbit, pshifted] = ...
                    jungembnew(Io(i,j:j+2), eqdata, pdx);
                pxs = pxs + pshifted;
                pdx = pdx+2-unusedbit;
                x=x+3;
            end
        end
    end
```

A.1.1 An Example MATLAB Function: *MyFunction*$(\cdot)$

```
function [Iwfull, Ctot] = MyFunction(Io, eqdata)
Io = double(Io);

depth = ceil(log2(double(max(Io(:)+1))));
MAX = 2^depth -1;
Io(Io==0) = Io(Io==0)+1;
Io(Io==MAX) = Io(Io==MAX)-1;
k=mod(size(Io),3);
Iop = Io(1:end-k(1), 1:end-k(2));
pdx =1;
[M, N] = size(Iop);

Idx = double(reshape(1:M*N, [M,N]));
%Block-wise zigzag scanning
Izdx = im2col(Idx,[3 1],'distinct');
Iopz = Iop(Izdx);

pdx =1;
[R, C] = size(Iopz);
Iw = double(zeros(R, C));
for j = 1:C
        pix(1:3) = Iopz(:,j);
        [Iw(:,j), unusedbit] = jungemb(pix, eqdata, pdx);
        pdx = pdx+2-unusedbit;
end

temp=sortrows([Iw(:), Izdx(:)],2);
Iwnew= reshape(temp(:,1), [M, N]);

Iwfull = uint8(Io);
Iwfull(1:end-k(1), 1:end-k(2))=Iwnew(:,:);
Ctot= pdx-2+unusedbit-1; %new line
end
```