Tribhuvan University

INSTITUTE OF ENGINEERING

PULCHOWK, LALITPUR

Dissertation No: [Number here]

Title of your Thesis....

«Name of PhD Candidate]»

A DISSERTATION SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

«[DEPT. NAME HERE]»

«[Month, Year]»

Dedicated to my [Family or any name] . . .

specify name if any

Copyright©

Declaration of Authorship

Dissertation entitled "**«[Title of your Thesis....]»**", which is being submitted to the Department of Electronics and Computer Engineering, Pulchowk Campus, IOE, TU; Nepal for the award of the degree of «[Doctor of Philosophy]» is a research work carried out by me under the supervision of «[Supervisor Name/Address here]» between «[Date range eg. November 2017 to January 2021]». I declare that this is my work and has not been previously submitted by me at any university for any academic award.

«Name of PhD Candidate«

Signed:

_____

Date: eg. September 01, 2021

_____

Recommendation

The undersigned certify that they have read and recommended to the «Dept. name here» for acceptance, a dissertation entitled "**«[Title of your Thesis....]»**", submitted by **«[Name of PhD Candidate]»** in partial fulfillment of the requirement for the award of the degree of **«[Doctor of Philosophy e.g. Computer Engineering]»**.

«Name here»,
Supervisor,
Dept./University Name

«Name here»,
Supervisor,
Dept./University name

«Name here»,
External Examiner, DRC
Post, Dept./University name

Departmental Acceptance

The dissertation entitled «"**Title of your Thesis....**"», submitted by **Name of PhD Candidate** in partial fulfillment of the requirement for the award of the degree of «[**Doctor of Philosophy in e.g. Computer Engineering**]» has been accepted as a bonafied record of work carried out by him in the department.

«DRC Chairperson name here»,
DRC Chairperson,
Dept name here....,
Pulchowk Campus, Institute of Engineering,
Tribhuvan University, Nepal

September 01, 2021

Tribhuvan University

INSTITUTE OF ENGINEERING

The undersigned certify that they have evaluated the dissertation entitled «[**"Title of your Thesis...."**]» submitted by **«[Name of PhD Candidate]»** and have external oral presentation for the partial fulfillment of the requirement for the degree of «[**Doctor of Philosophy**]» and recommended to the IOE for acceptance of this dissertation.

«External examiner name», address
External Examiner

«Internal examiner name 1», address
Internal Examiner

«Internal examiner name 2», address
Internal Examiner

Tribhuvan University

INSTITUTE OF ENGINEERING

The dissertation «[**"Title of your Thesis...."**]» submitted by «[**Name of PhD Candidate**]» for partial fulfillment of the requirement for the degree of Doctor of Philosophy in «[Computer Engineeringe.g. Computer Engineering]» has been accepted by the IOE Research Committee (IERC) upon the recommendation of the supervisor and the Departmental Research Committee (DRC) with the approval by the following examiners.

External Examiner:

External Examiner name,
address

Internal Examiners:

Internal Examiner Name 1,
address

Internal Examiner Name 2,
address

«Name of IERC Chairperson»
IERC Chairperson and Dean,
Institute of Engineering,

«September 01, 2021»

This page is left intentionally blank...

Research Motivation

write here about your motivation to this research. why you choose this area etc?

Abstract

Abstract of your work here (at most one page)

Acknowledgement

Acknowledgment here

«Name of PhD Candidate»
«[Roll No]»

List of Figures

List of Tables

List of Algorithms

List algorithms if any. this page is optional

List of Abbreviations

AFRINIC	African Network Information Centre
ALR	Adaptive Link Rate
.....	

Contents

This page is left intentionally blank...

Chapter 1

Introduction

include sumamry of chpater here. e.g.
The research is introduced in this chapter with background and statement of the problem. Based on the designed research questions and presented use case, research objectives are defined. Summary of the publication works throughout the study period are presented and the overall structure of the thesis is outlined in this chapter.

1.1 Background

Latex overleaf is preferable to prepare this dissertation report. Please follow the minimum setting below, while using MS Word for your report.
above chapter space: 20pt
Below chapter space: 40pt
Chapter in-between space: 20pt
Left margin (Inner margin): 3cm
Right margin (Outer margin): 2.5cm
Binding offset: 0.5cm
Normal paragraph font size: 12pt
Font type: lmmodern (modern computer font)
Reference citation: IEEEtran/Elsevier(Scopus)/APA/Harvard

1.2 Statement of the Problem

.....

1.3 Research Questions

Following research questions (RQ) were designed to address the main problem outlined in this research. These are:

RQ1: RQ1?

RQ2: RQ2?

RQ3: RQ3?

1.4 Research Use Cases

The use case diagram depicted in Figure 1.1 shows the scope and limitations.

Figure 1.1: Sample Figure...

1.5 Aim and Objectives

With the aim to ....., the objectives (OB) of this research were to

OB1: OB 1.

OB2: OB 2.

OB3: OB 3.

1.6 Scientific Contributions

Provide the summary of your scientific contribution here in the following tabular example...

Table 1.1: Peer reviewed archival journal papers

ID	Description	Publisher (Objective Met)
JP1	Dawadi, B. R., Rawat, D. B., and Joshi, S. R. (2019). Software Defined IPv6 Network: A New Paradigm for Future Networking. Journal of the Institute of Engineering, 15(2), 1-13.	Springer, Cham (Book Chapter) (OB1, OB2)
JP3	xyz	.....

mention conference paper if any...

Table 1.2: Peer reviewed conference papers

ID	Description	Publisher (Objective Met)
CP1	Dawadi, B. R., Rawat, D. B., Joshi, S. R., and Keitsch, M. M. (2018, October). Joint cost estimation approach for service provider legacy network migration to unified software defined IPv6 network. IEEE 4th International Conference on Collaboration and Internet Computing (CIC) (pp. 372-379).	IEEE, Pennsylvania, USA (OB 1, 2, 3)
CP2	xyz	.....

1.7 Dissertation Organizations

The dissertation is organized into seven chapters. The chapter-wise structuring of the contents are summarized here.

- **Chapter 1** (this chapter) introduces .....
- **Chapter 2** provides the detailed literature review ....
- **Chapter 3** presents the details on conceptualization .....

- **Chapter 4** includes the research design and methodology. An overall methodological framework .....
- **Chapter 5** discusses on the results, analysis of experimental works, and the necessary interpretations. It also summarizes the contributions of scientific papers published.
- **Chapter 6** discusses on the overall research works with possible recommendations on the .....
- **Chapter 7** concludes the research. Limitations of the study and possible future enhancements are also briefly highlighted in this chapter.
- **Appendices** sections (A, B, C, and D) provides the dataset used for necessary simulations. It presents experimental platforms used throughout this research studies with results and analysis snapshots including information of program code, simulations, and configuration details with questionnaire survey form.....

Chapter 2

Literature Review

In this chapter, a detailed literature review on .....

2.1 Introduction ....

.....

2.2 another sec...

2.2.1 subsection here

sample here .....sample citation in the contents [1]

put table if any in the vertical format (sample in Table 2.1).

2.3 Research Gap and the Proposed Approach

.....

2.4 Chapter Summary

summarize the chapter here

Figure 2.1: cap.....

Table 2.1: Sample vertical table

Title 1	Title 2	Title 3	Title 4	Title 5	Title 6	Title 7
Approach	Hybrid network (Traditional + SDN)	Traditional	Hybrid network (Traditional + SDN)	Hybrid switch (Traditional + SDN)	SDN route mapping with traditional routing	Hybrid switch (Traditional + SDN)
Applicable networks	All enterprise and ISP networks	All enterprise and ISP networks	All enterprise and ISP networks	Suitable for large scale experimentation	Small enterprises and data centers	Small enterprises and data centers
Performance	Robust, distributed and scalable	Inherits the benefits (scalability, robustness, fault tolerant) of legacy routing protocols like OSPF, IS-IS	Performance issues at large scale implementation due to tunneling and VLAN tagging. Resource performance tradeoffs	Performance issues at large scale implementation due to tunneling (openVPN, VXLAN)	Operation and configuration complexity for large networks	Not a robust approach over large scale carrier grade network migration
Controller	ONOS	Fibbing controller (own controller)	POX	FloodLight	POX/NOX	OVS controller V2.0.7
Production status	In production and implementation	Not Known	Not in production	Not Known	Not in production	Not in production
Transition support	Yes	Yes	Yes	Yes	No	Yes

Chapter 3

Stream specific chapter

Chapter abstract here....
this chapter is stream specific, eg. Concept Formulation. it shall be avoided based on the researcher's requirement

3.1 Section here

sample enumeration

1. no 1
2. no 2
3. no 3
4. no 4
5. no 5

sample equations...

$$\forall \delta \in [L, S, M, T, C], z = ANFIS(\delta) = \begin{cases} \leq 0 \text{ (Replace)}, \delta = -16 \\ > 2 \text{(Upgrade)}, \delta \in [2, 3, 4] \\ \leq 2 \text{ (Replace)}, \delta \in [2, 3, 4] \end{cases} \tag{3.1}$$

$$Z = W_1 \cdot L + W_2 \cdot S + W_3 \cdot M + W_4 \cdot T + W_5 \cdot C \tag{3.2}$$

sample algorithm here....

Figure 3.1: sample figure placement

Algorithm 3.1: Sample algorithm

```
1  Function DFS(v):
       Input: function variable input section here
                                                  // explanation of variable if any
2      if expression then
3          statement                               // comment on if statement if any
4      else
5          statement                             // comment on else statement if any
6      for for expression do
7          for statement section...
8  Function Main:
       Input: main function variable declaration                  // comments if any
9      for v in G do
10         statement 1                                             // comments if any
11         statement 2                                             // comments if any
```

sample item listing here

- item 1
- item 2
- item 3

3.2 Chapter Summary

summarize chapter here

Chapter 4

Methodology

chapter abstract here ....

4.1 Overall Design and Framework

...

4.2 Data samples..

.....

4.3 Chapter Summary

chapter summary here...

Chapter 5

Analysis, Results, and Findings

chapter abstract

5.1 Section Title1

any other sections

5.2 Section Title2

any other sections

sub figure sample

(a) caption here (b) cap 2

Figure 5.1: Sample sub-figures placement

5.3 Chapter Summary

chapter summary here...

Chapter 6

Discussion

chapter abstract here

6.1 Discussion

6.2 Chapter Summary

summary here....

Chapter 7

Conclusions and Future Enhancement

7.1 Conclusions

conclusion here...

7.2 Academic Contributions

paper abstracts and contributions summary here

7.3 Future Enhancement

future enhancement here...if any

References

[1] B. R. Dawadi, D. B. Rawat, S. R. Joshi, P. Manzoni, Legacy Network Integration with SDN-IP Implementation towards a Multi-Domain SoDIP6 Network Environment, Electronics 9 (9) (2020) 1454. doi:10.3390/electronics9091454.

Appendix A

Dataset for Simulations and Analysis

«[The Appendices sections are optional based on the requirement]»

list dataset if any..

Appendix B

Experimental Platform and Work Snapshots

put your work snapshot here...if any

Appendix C

Program Code and Configuration Details

provide links for program code if any...or configuration details if any...

Appendix D

Questionnaire Survey Form

include this if any...

Appendix E

Summary of Research Visits

This page is optional.....

Name of PhD Candidate had visited following international universities as a part of this research studies.

1. Visited as PhD research scholar at the dept. name, University name if any, address here

   Period : Period of visit if any
   Visiting Advisor : Advisor's name if any
   Funding : Funder's name if any

2. .....