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# A SAMPLE DOCUMENT FOR THE SJTU THESIS TEMPLATE

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# Abstract

This thesis demonstrates the SJTU Thesis template compiled with the main language set to English. It covers the standard front matter, two content chapters with sections, a table, a figure, and a resolved bibliography using `natbib` and `bibtex`, since the template itself does not mandate biblatex.

**Key words:** SJTU, thesis template, XeLaTeX

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# Chapter 1 Introduction

This chapter introduces the research problem and states the contributions of the thesis.

## 1.1 Motivation

Large-scale distributed systems increasingly rely on approximate consensus protocols to balance latency and consistency [Lamport, 1998]. This work studies how such protocols degrade under network partition.

## 1.2 Contributions

The main contributions are:

1. A formal model of partial-partition tolerance.
2. An empirical evaluation summarised in Table 3.1.
3. A reference implementation used to produce Figure 3.1.

# Chapter 2 Related Work

## 2.1 Consensus Protocols

Classical consensus protocols such as Paxos [Lamport, 1998] and Raft [Ongaro and Ousterhout, 2014] assume a fully connected network. This thesis relaxes that assumption.

## 2.2 Partition Tolerance

Prior work on partition tolerance typically trades off availability for consistency, following the CAP theorem framing.

# Chapter 3 Evaluation

## 3.1 Experimental Setup

Experiments were run on a five-node cluster. Table 3.1 summarises throughput under increasing partition rates.

**Table 3.1 Throughput (requests/s) under simulated partition rates.**

| Partition rate | Baseline | Proposed |
|---|---|---|
| 0% | 12,400 | 12,100 |
| 5% | 9,800 | 11,600 |
| 10% | 6,200 | 10,900 |

## 3.2 Latency Under Load

Figure 3.1 shows median request latency as the partition rate increases.

**Figure 3.1 Median latency versus simulated partition rate.**

## 3.3 Discussion

The proposed protocol maintains throughput more effectively than the baseline once the partition rate exceeds 5%, at the cost of a small constant latency overhead [Ongaro and Ousterhout, 2014].

# Bibliography

Leslie Lamport. The part-time parliament. *ACM Transactions on Computer Systems*, 16(2): 133–169, 1998.

Diego Ongaro and John Ousterhout. In search of an understandable consensus algorithm. In *USENIX Annual Technical Conference*, pages 305–319, 2014.

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