

# Algbric Topogy

Ashan De Silva

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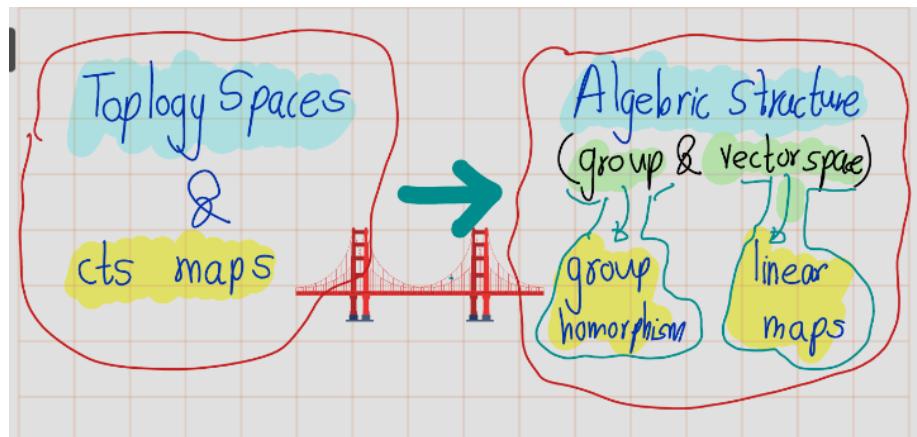
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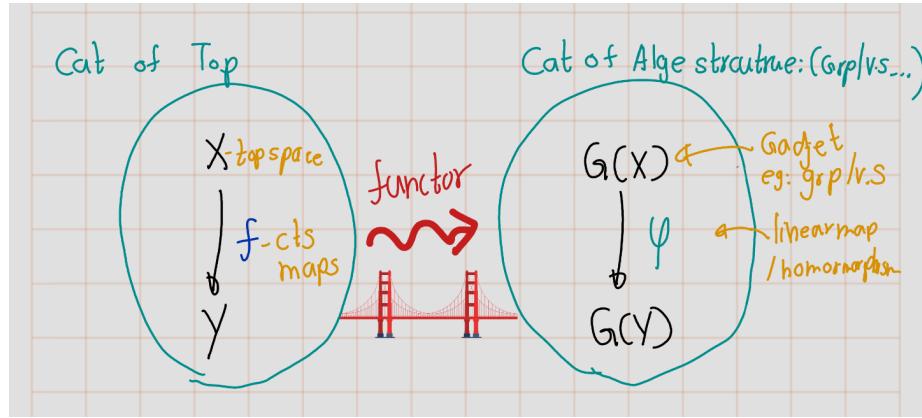
# Chapter 1

## Introduction

### 1.0.1 What is Algebraic topology?



Roughly it's about tools/methods connecting **algebra** and **topology**.



The “bridge” is **algebraic topology**.

In order to be useful, the associations

$$X \leftrightarrow G(X) \quad \text{and} \quad f \leftrightarrow \varphi_f$$

ought to satisfy some properties.

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Property	Mathematical Form
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**Identity**  $\text{id}_X : X \rightarrow X \mapsto \text{id}_{G(X)} : G(X) \rightarrow G(X)$

**Preservation**

**Composition**  $X \rightarrow Y$  and  $g : Y \rightarrow Z$ , then

**Compatibility**  $\varphi_g : X \rightarrow Z \mapsto \varphi_g \circ \varphi_f : G(X) \rightarrow G(Z)$

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$\leftrightarrow$

## Chapter 2

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