

THE CLASSIFICATION OF DIGITAL COVERING SPACES

Abstract

The main purpose of Digital Topology is the study of topological properties of discrete objects which are obtained digitizing continuous objects. Digital Topology plays a very important role in computer vision, image processing, and computer graphics.

The digital fundamental group of a discrete object was introduced in Digital Topology by Kong . L Boxer shows how classical methods of Algebraic Topology may be used to construct the digital fundamental group. Knowledge of the digital fundamental group is a very important tool for Image Analysis. A general algorithm to decide whether two discrete objects have isomorphic fundamental groups would be a very powerful tool for Image Analysis. The digital covering space is an important tool for computing digital fundamental groups of digital images. Han has introduced a digital covering space and given some properties of it. Boxer develops further the topic of digital covering space by deriving digital analogs of classical results of Algebraic Topology concerning the existence and properties of digital universal covering spaces.

We use the fundamental group of a digital image as a tool for studying digital covering spaces. In this talk we give the digital covering spaces are classified by the conjugacy class corresponding to a digital covering space.