

1. Introduction

The software consists of three functional modules: The image processing module, the puzzle pieces measuring module and the puzzle searching module.

2. Functional module description

2.1 Image processing module

The image processing module identifies the shape of puzzle piece from an image and removes the background color. The main objective of this module is to reduce the error in the dimension measuring module.

2.2 puzzle pieces measuring module

The puzzle piece measuring module converts the shape of each piece into coordinate data. Which data provided

the relative length of each side, the angle between adjacent sides of each puzzle piece.

2.3 puzzle searching module

The searching algorithm is the critical part of the program. We conducted few test on multiple students and summarized some common methods as the searching algorithm.

- The basic method: place the puzzle in specific location one by one and find the most suitable puzzle piece.
- Search by length: Some puzzle piece has unique shapes which may match with another puzzle piece with similar side length pattern.
- Search by angle: the space with specific angle may match with the puzzle piece.