Project 3: Wafer Sawing Line Detection

1. Introduction

Wafer is a thin, circular disk of semiconductor material, typically silicon, that is used in the production of integrated circuits (ICs). After a layer of conducting or semiconducting material is deposited on the surface of the wafer, it is etched to form a pattern of conductive or semiconducting lines that will form the components of the IC. The wafer is then diced into individual ICs, which are then assembled into finished products.

2. Requirements

Wafer sawing line detection is an important task, which involves the detection and estimation of the following steps, as show in Figure P3:

(1) Upper edge of the cutting line

(2) Lower edge of the cutting line

(3) The center line of 1 and 2 (a.k.a. sawing line, the green line in Figure P3)

(4) The angle θ of sawing line (angle is obtained clockwise with the right horizontal line as the positive direction; note that the red dashed line is the horizontal line)

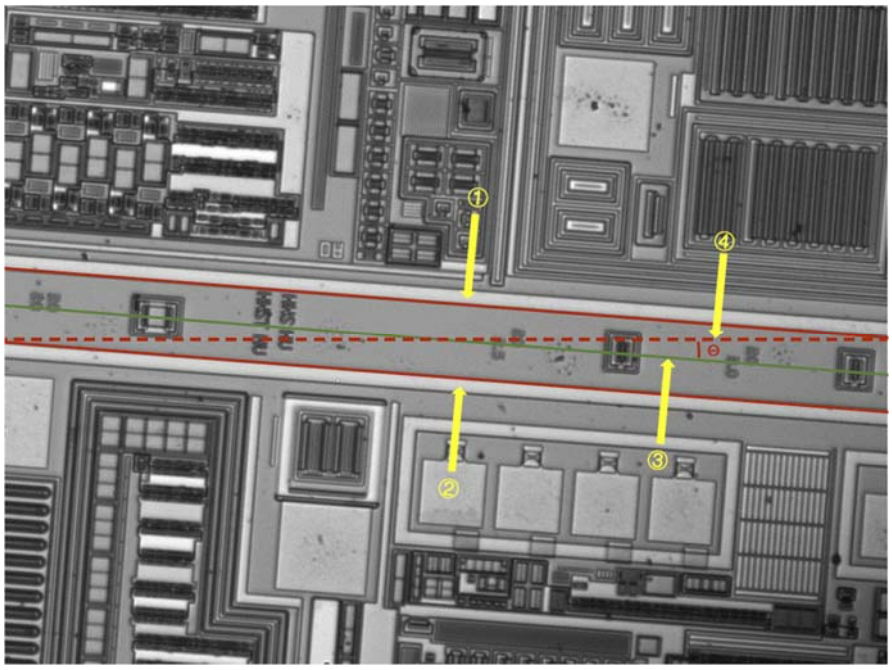

Figure P3. The example of wafer sawing line detection

You are required to provide the upper edge, the lower edge, the sawing line and the angle of sawing line of the image named "wafer.jpg" in the package.

Scoring Criteria:

(1) The style, organization, and content of the report;

(2) The correctness of the method used;

(3) The performance of the code.

Note:

(1) You can use any programing language you like.

(2) You **CAN** call third-party or built-in library for key processing steps.

(3) You can try **ANY** methods you know to improve the detection performance. If you refer to others' papers, please list the reference papers at the end of your report.

(4) You are required to submit the source code and a brief report (a template is provided).

(5) Please pack all files (code and report) into one compressed ZIP/RAR file named 'proj3_student-id_short-name.zip/rar', and send it to: 24b951025@stu.hit.edu.cn.

(6) Deadline: November 24, 2024.

(7) Do it by yourself! Plagiarism is strictly prohibited.