



# Computer Graphics and Visualization CS402.3

## Coursework 2025-2026

**Submission Deadline:** TBA

**Coursework Type:** Group Assignment

**Module Leader:** Dr. Rasika Ranaweera

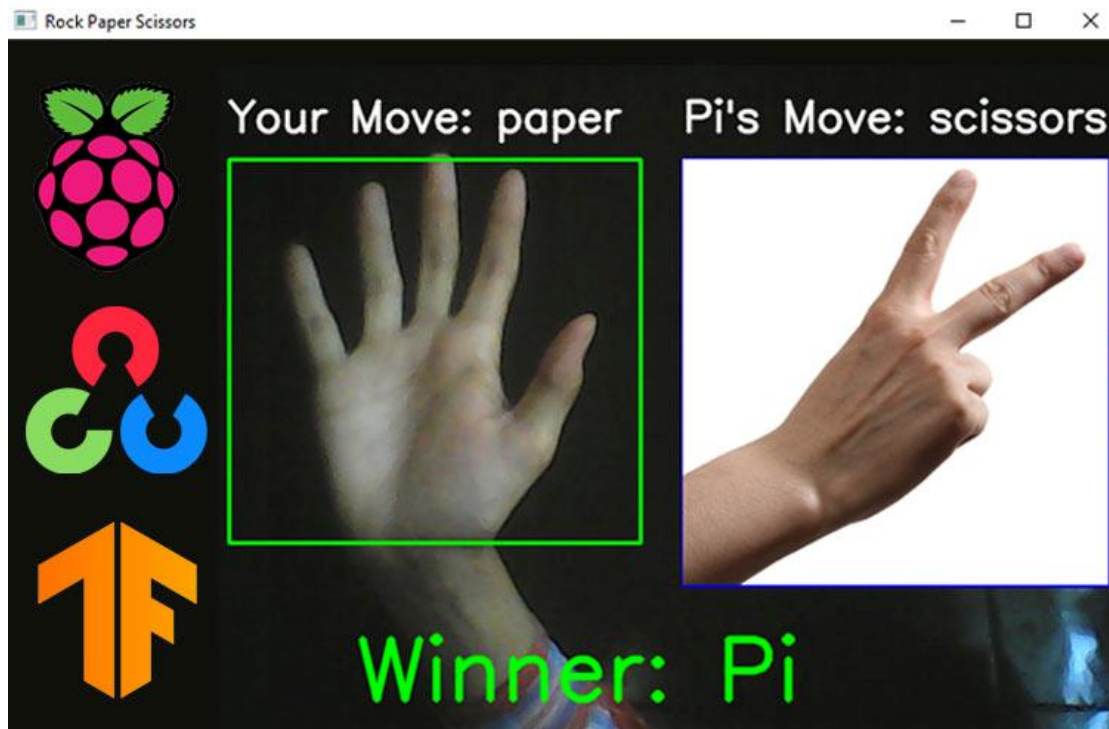
**E-mail:** [ranaweera.r@nsbm.ac.lk](mailto:ranaweera.r@nsbm.ac.lk)

# Coursework

This coursework for CS402.3 is worth 30% of the module marks and contains two parts: Prototype and a report. The prototype is basically a working software and the report should contain approaches, screenshots, testing results, discussion, and most importantly individual contribution of the group members.

## 1. Scenario

You are asked to create a rock-paper-scissor game<sup>1</sup> which one can play with a computer/smart phone. When the user says “Rock, Paper, Scissor, *Shoo!*” and pose a gesture with fingers, your application should also pose a gesture. The general rule is the rock beats scissor, scissor beats paper, paper beats rock, and same gesture is treated as a tie.



### I. Processing

Your program preferably written in Python language should take a photo of the human hand gesture, remove background, and identify the gesture posed.

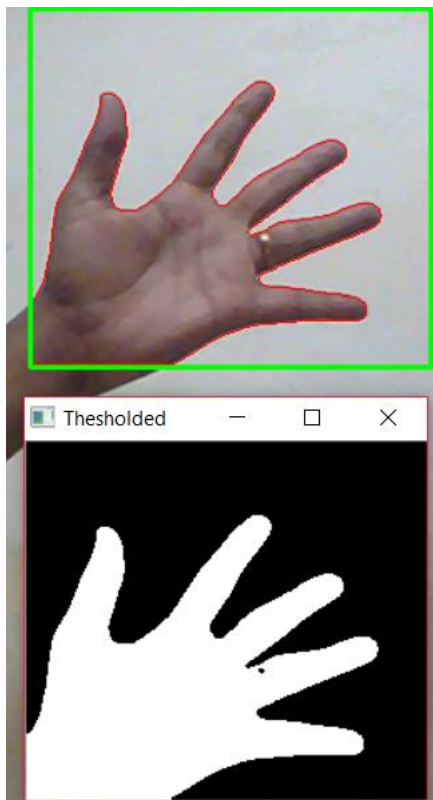
**Note:** While the program is running you need to show the progress of the image processing. Such as grayscale, thresholding, binarization, etc.

```
$ python rps.py
```

---

<sup>1</sup> [https://en.wikipedia.org/wiki/Rock\\_paper\\_scissors](https://en.wikipedia.org/wiki/Rock_paper_scissors)

## II. Visualization



You are required to display the outlines, gestures posed, and the gesture posed by the application. The game should be easy to play, attractive, error free, and professional. You may be as creative as possible.

You may also extend your application to the next level by Rock, Paper, Scissors, Lizard, Spock<sup>2</sup> an extension from the popular TV series The Big Bang Theory<sup>3</sup>.

### 2. Grouping

You are required to form groups of **five/six members** each playing different role in the project, but everybody is contributed to the main concerns: image processing and visualization. The report should contain individual contribution of each about a page including technologies and coding. Everyone

must play the game and add evidence.

You must also properly maintain a **GitHub repository**; all commits must be properly done with meaningful messages. Individuals should add self-tracking summary to the individual contribution in the report.

## 3. Deliverables

### I. Prototype

The prototype should be a working solution where one can input different images and get a summary.

### II. Report

The report should have a comprehensive discussion about what types of image processing concepts were used, why they were used, screenshots of all the image processing steps at each step, testing results for the given input images, discussion about challenges faced, and individual contribution. The front page should contain group member names, roles, indices, subject title, and code.

<sup>2</sup> [https://bigbangtheory.fandom.com/wiki/Rock,\\_Paper,\\_Scissors,\\_Lizard,\\_Spock](https://bigbangtheory.fandom.com/wiki/Rock,_Paper,_Scissors,_Lizard,_Spock)

<sup>3</sup> <https://www.imdb.com/title/tt0898266/>

You are required to prepare the report using standard references, figures, tables, and equations. **Each member must explain his/her contribution** with a minimum of one page; one can use illustrations for explanations, then paragraphs need to be extended.

#### 4. Assessment Criteria

Category	Criteria	LOs	Marks
Prototype (Group)	<ul style="list-style-type: none"> <li>• Quality of the program (coding styles, comments, structure, naming conventions, testing results, etc.)</li> <li>• Executable program</li> <li>• Use of image processing libraries and techniques</li> </ul>	LO3	50%
Report (Group)	<ul style="list-style-type: none"> <li>• Screenshots of the entire step by step process</li> <li>• Discussion about all image processing related technologies used</li> </ul>	LO1 LO2	35%
Contribution (Individual)	<ul style="list-style-type: none"> <li>• Individual contribution</li> <li>• GitHub history</li> </ul>	LO2	15%

#### 5. Submission Type

The coursework should be uploaded to the NLEARN as a two submissions the prototype and the report:

- Prototype should be a zip file
- Report should be a MS Word file