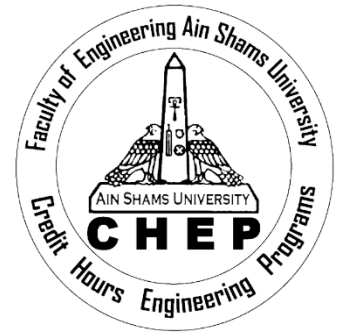


Ain Shams University
Faculty of Engineering
Credit Hours Engineering Program (CHEP)
Computer Engineering and Software
Systems (CESS)



CSE365: Computer Vision

Bubble Sheet Recognition

Submitted by:

16P8162 Ayman Yasser Shabana
16P6048 Ahmad Ashraf Mounir

Algorithm:

1-Apply median blur to original image.

AIN SHAMS UNIVERSITY
I-Credit Hours Engineering Programs
(i.CHEP)

End-Course/Module Evaluation

University of East London

Course Code: Course Name:

Semester: ☐ Fall ☐ Spring ☐ Summer

Gender: ☐ Male ☐ Female

Program: ☐ MCTA ☐ ENVER ☒ BLDG ☐ CESS ☐ ERGY ☐ COMM ☐ MANF
☐ LAAR ☐ MATL ☐ CISE ☐ HAUD

Mark as shown: ☒ CORRECT ☐ INCORRECT

Please use a ball-point pen or a thin felt tip. This form will be processed automatically.
Please follow the examples shown on the left hand side to help optimize the reading results.

It is important to us to get feedback from you about this course/module. The results of the survey are anonymised and individual comments are not identified, so please take the time to answer all the questions as fully as you can. Your feedback will be used to review this course/module and to plan for the future.
Please select one box for each question that best reflects your opinion.
Please do not identify any individuals (including staff names) in your comments.

1. Teaching Sessions

1.1 The teaching on this course/module is intellectually stimulating.

1.2 Matters are explained well in the teaching sessions.

1.3 The teaching methods used helped me to learn.

1.4 Lecturers were good at explaining things.

1.5 The course/module was academically challenging.

2. Course/Module Support

2.1 I am aware of the course/module learning outcomes.

2.2 The assessment requirements were clear.

2.3 I feel well supported on this course/module.

2.4 Feedback on summative work was provided within the time specified.

2.5 The workload for this course/module is manageable.

2.6 The assessments completed so far stimulated my learning.

3. Course/Module Organization

3.1 The course/module was well organized and ran smoothly.

3.2 The course/module focused on what was set out in the student guide.

3.3 I have been able to contact staff when I needed to.

4. Course/Module Resources

4.1 The course/module materials on Moodle are helpful in supporting my learning.

4.2 The library resources for the course/module, including its digital resources, meet my needs.

4.3 I am satisfied with the quality of classroom facilities for this course/module.

5. Course/Module Satisfaction


5.1 Overall, I was satisfied with my experience of this course/module.


5.2 I would recommend this course/module to another student

Strongly Agree Agree Neutral Disagree Strongly Disagree

Page 1 of 2

2-Convert image to grayscale.

 **AIN SHAMS UNIVERSITY**
I-Credit Hours Engineering Programs
(i.CHEP)

 **University of East London**

End-Course/Module Evaluation

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	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Teaching Sessions					
1.1 The teaching on this course/module is intellectually stimulating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
1.2 Matters are explained well in the teaching sessions.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
1.3 The teaching methods used helped me to learn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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1.5 The course/module was academically challenging.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Course/Module Support					
2.1 I am aware of the course/module learning outcomes.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.2 The assessment requirements were clear.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.3 I feel well supported on this course/module.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
2.4 Feedback on summative work was provided within the time specified	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
2.5 The workload for this course/module is manageable.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.6 The assessments completed so far stimulated my learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
3. Course/Module Organization					
3.1 The course/module was well organized and ran smoothly.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.2 The course/module focused on what was set out in the student guide.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
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4.2 The library resources for the course/module, including its digital resources, meet my needs.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.3 I am satisfied with the quality of classroom facilities for this course/module.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Course/Module Satisfaction					
5.1 Overall, I was satisfied with my experience of this course/module.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.2 I would recommend this course/module to another student	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Page 1 of 2

3-Crop a simple part of the image which should only have horizontal or vertical lines.

120 YEARS
Engineering Excellence (Awards since 1920)

1-Credit Hours Engineering Programs (i.CHEP)

End-Course/Module Evaluation

University of East London

Course Code:

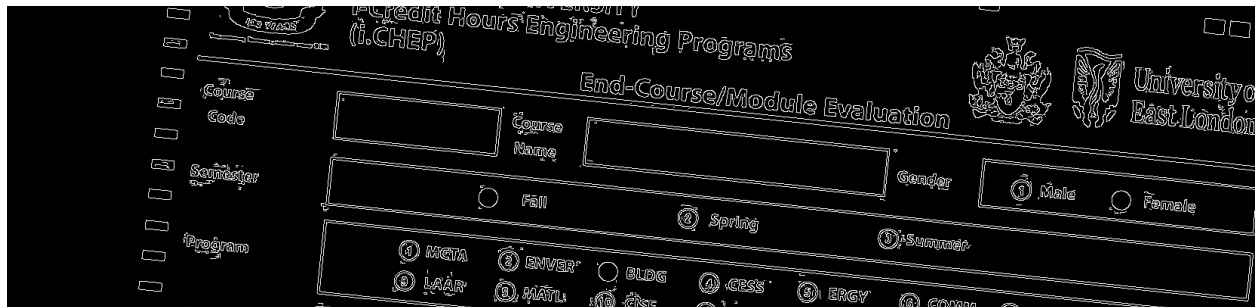
Course Name:

Semester: ☐ Fall ☐ Spring ☐ Summer


Gender: ☐ Male ☐ Female

Program: ☐ MCTA ☐ ENVER ☒ BLDG ☐ CESS ☐ ERGY ☐ COMM ☐ LAAR ☐ MATL ☐ CISE


4-Apply Canny Edge Detector.



5-Get hough lines then check the theta of the first one and if it is not 90 degrees rotate the grayscale image by the difference using Affine.



AIN SHAMS UNIVERSITY
I-Credit Hours Engineering Programs
(i.CHEP)



University of East London

End-Course/Module Evaluation

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Course Name:

Gender: ☐ Male ☒ Female

Mark as shown: ☒ CORRECT ☐ INCORRECT


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	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. Teaching Sessions					
1.1 The teaching on this course/module is intellectually stimulating.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5
1.2 Matters are explained well in the teaching sessions.	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
1.3 The teaching methods used helped me to learn.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5
1.4 Lecturers were good at explaining things.	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
1.5 The course/module was academically challenging.	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
2. Course/Module Support					
2.1 I am aware of the course/module learning outcomes.	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
2.2 The assessment requirements were clear.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input checked="" type="radio"/> 5
2.3 I feel well supported on this course/module.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5
2.4 Feedback on summative work was provided within the time specified	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
2.5 The workload for this course/module is manageable.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input checked="" type="radio"/> 4	<input type="radio"/> 5
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3. Course/Module Organization					
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4. Course/Module Resources					
4.1 The course/module materials on Moodle are helpful in supporting my learning.	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
4.2 The library resources for the course/module, including its digital resources, meet my needs.	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
4.3 I am satisfied with the quality of classroom facilities for this course/module.	<input type="radio"/> 1	<input type="radio"/> 2	<input checked="" type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
5. Course/Module Satisfaction					
5.1 Overall, I was satisfied with my experience of this course/module.	<input checked="" type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
5.2 I would recommend this course/module to another student	<input type="radio"/> 1	<input checked="" type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

Page 1 of 2

6-Get Hough circles of image and draw their outlines in black.



AIN SHAMS UNIVERSITY
I-Credit Hours Engineering Programs
(i.OHEP)



University of
East London

End-Course/Module Evaluation

Course Code:

Semester: ☒ Fall ☐ Spring ☐ Summer

Course Name:

Gender: ☐ Male ☒ Female

Program:

<input type="radio"/> MCTA	<input type="radio"/> ENVER	<input checked="" type="radio"/> BLDG	<input type="radio"/> CESS	<input type="radio"/> ERGY	<input type="radio"/> COMM	<input type="radio"/> MANF
<input type="radio"/> LAAR	<input type="radio"/> MATL	<input type="radio"/> CISE	<input type="radio"/> HAUD			

Mark as shown:

☒ CORRECT

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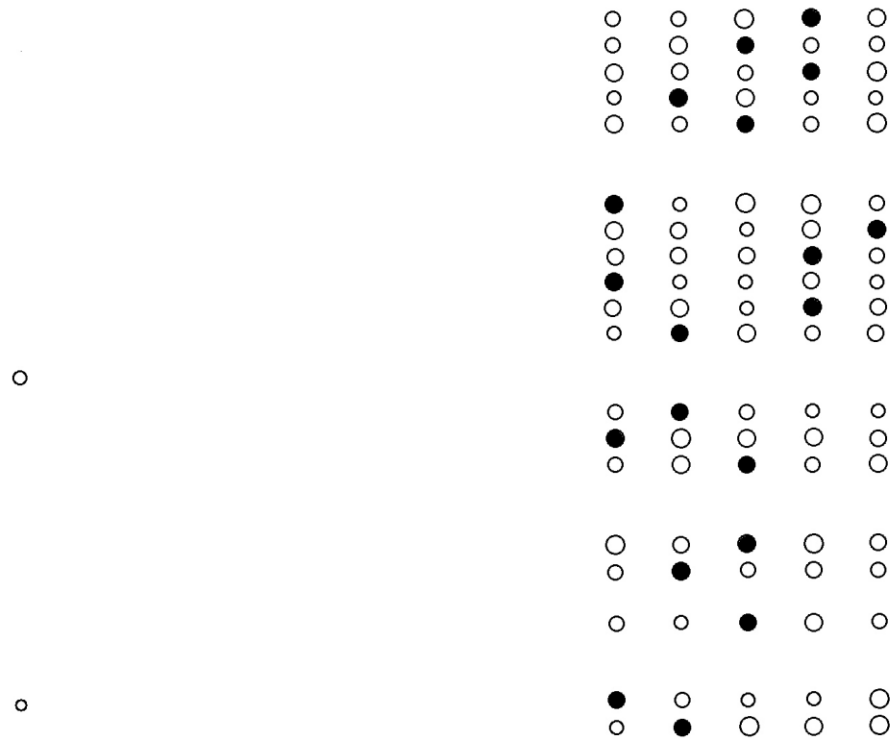
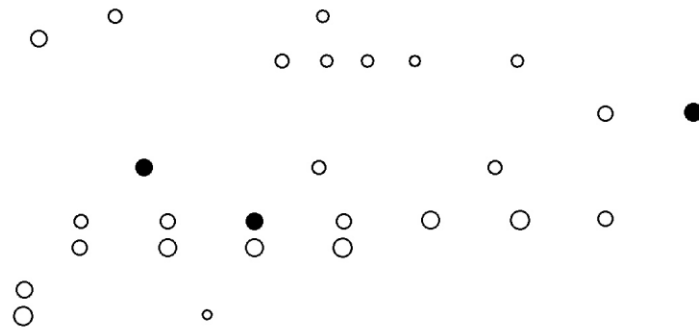
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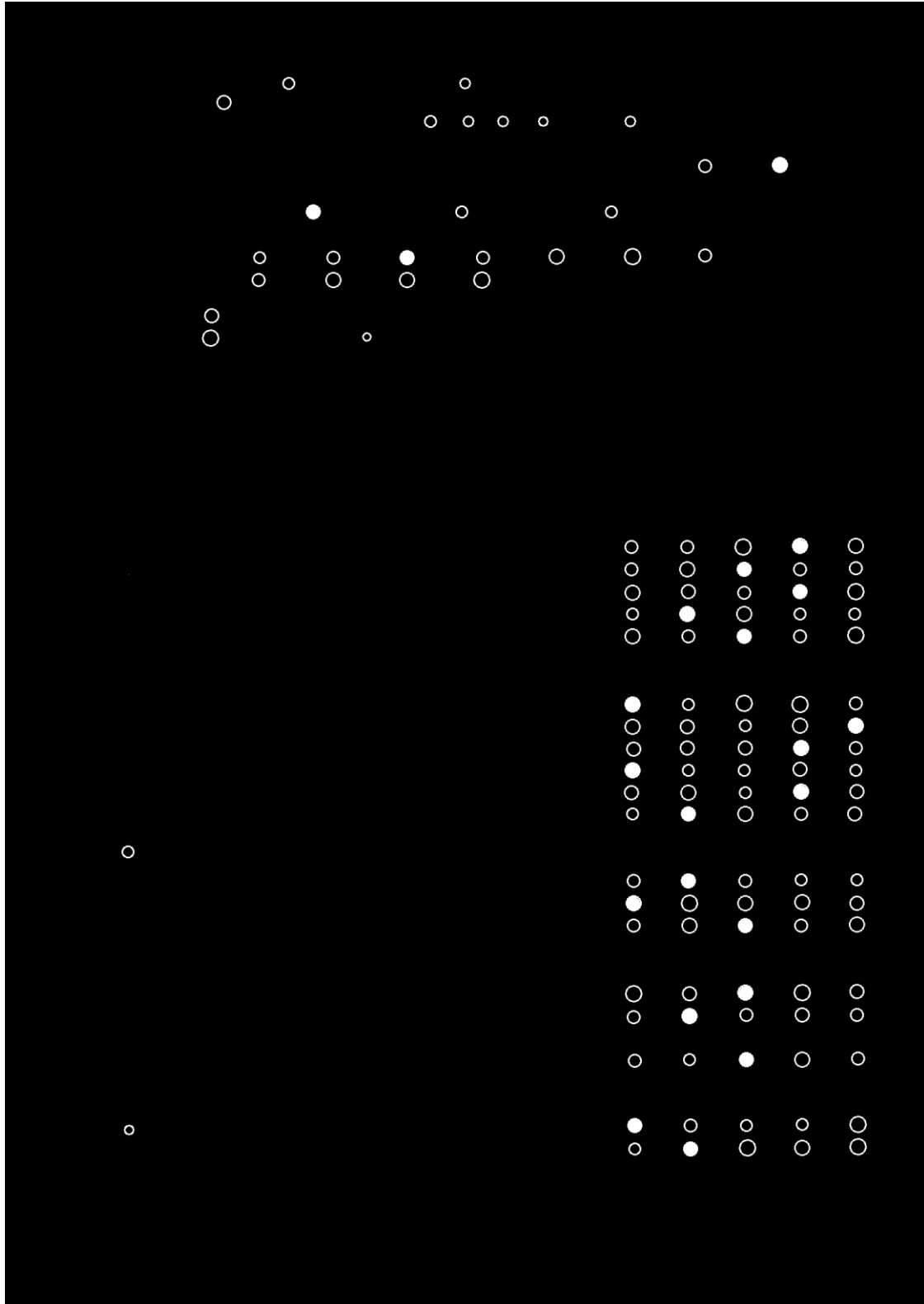
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Page 1 of 2

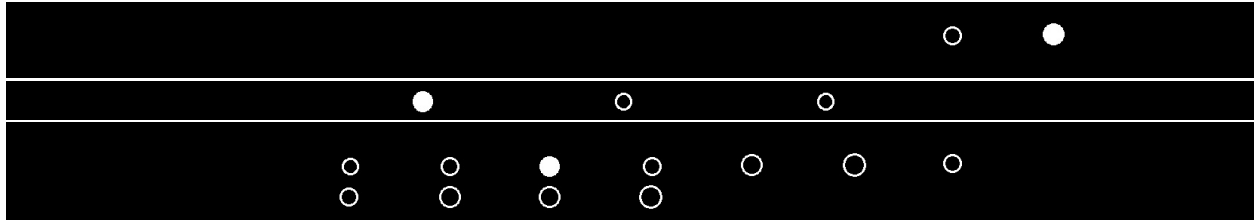
7-Use a binary threshold on the image to get rid of unnecessary details.



8-Invert the image.

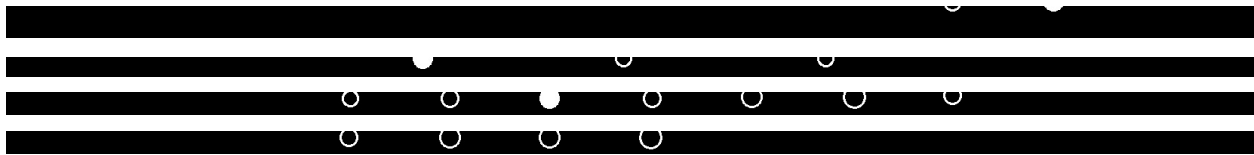


9-Crop the relevant parts of the image into separate images.



10-Crop the individual images again to make sure every object has at least one pixel on the first row.

In the case of programs, separate it into 2 images.



11-Get connected components for each separate image and arrange them by area.

12-The maximum area in the separate section is the filled in bubble and since we have made sure every object has at least one pixel on the first row, they appear in the correct order in the list so they are easy to identify.