CMPT414 A2, Junsheng Pan, 301177231

# Animals.jpg

|  |  |  |
| --- | --- | --- |
|  | Original | Edge(Canny) |
|  |  |  |
| elephant | Accumulator Array Image(S:1,R:90) | Detection(S:1,R:90) |
|  |  |  |
| Accumulator Array Peak(S:1,R:90) | |
|  | |

|  |  |  |
| --- | --- | --- |
| bear | Accumulator Array Image(S:1,R:330) | Detection(S:1,R:330) |
|  |  |  |
| Accumulator Array Peak(S:1,R:330) | |
|  | |

## Notes

In “animals.jpg”, both “bear” & “elephant” template is matched by first estimating the rotation angle. No scale is needed in this matching.

“S:1.R:330” means, scaling factor = 1, rotation angle = 330 degree CCW.

# Animals2.jpg

|  |  |  |
| --- | --- | --- |
|  | Original | Edge(Canny) |
|  |  |  |
| elephant | Accumulator Array Image(S:1.3,R:330) | Detection(S:1.3,R:330) |
|  |  |  |
| Accumulator Array Peak(S:1.3,R:330) | |
|  | |

|  |  |  |
| --- | --- | --- |
| bear | Accumulator Array Image(S:1.3,R:260) | Detection(S:1.3,R:260) |
|  |  |  |
| Accumulator Array Peak(S:1.3,R:260) | |
|  | |

## Notes

In “animals2.jpg”, both “bear” & “elephant” template is matched by first estimating the rotation angle. Scaling factor of 1.3-1.33 is needed in this matching.

“S:1.3 R:260” means, scaling factor = 1.3, rotation angle = 260 degree CCW.

# Letters.png

|  |  |  |
| --- | --- | --- |
|  | Original | Edge(Canny) |
|  |  |  |
| K | Accumulator Array Image(S:1,R:0) | Detection(S:1,R: (-10:8:9)) |
|  |  |  |
| Accumulator Array Peak(S:0,R:0) | |
|  | |

|  |  |  |
| --- | --- | --- |
| Q | Accumulator Array Image(S:1,R:0) | Detection(S:1,R: (-10:8:9)) |
|  |  |  |
| Accumulator Array Peak(S:0,R:0) | |
|  | |

## Notes

In “letters”, both “K” & “Q” almost in the upright orientation. No scale is needed in this matching. In order to match multiple K&Q, I found that they’re differed by rotating a few degrees away from 0. Thus, I used a series of rotation of angles to matching all occurrences.

“S:1,R: (-10:8:9)” means,

scaling factor = 1,

rotation angle = from -10 to 8 degree CCW : {-10 -7.75 -5.5 -3.25 -1 1.25 3.5 5.75 8}