TECHNISCHE UNIVERSITÄT BERLIN

AIA02

Group H: *Qinshan Dai, 406464, qinshan.dai@campus.tu-berlin.de ,Elektrotechnik, Master;*
Yang Li, 408458, yang.li@campus.tu-berlin.de, Automotive Systems, Master;
Raphael Schymczyk, 349690, raphael1@mail.tu-berlin.de, Wirtschaftsingenieurwesen, Master;
Karel Smejkal, 388638, karel.smejkal@campus.tu-berlin.de, Computer Science, Master

Course: *Automatic Image Analysis*
Due date: *14:00, May 24th, 2019*

Answers

Question 1

1. The unnormalized FD of a given template object is calculated as

$$\forall \mu \in \{0, ..., 99\} : F(\mu) = \begin{cases} 1000 + i1000, & \text{if } \mu = 0 \\ 100 + i100, & \text{if } \mu = 1 \\ 0, & \text{otherwise} \end{cases}$$

The represented object is:

(i) a circle

(ii) a square

(iii) an ellipse

(iv) a triangle.

The object is located in the image at:

(i) (1000,1000)

(ii) (100,100)

(iii) (10,10)

(iv) (1,1)

The number of used boundary points is:

(i) 1000

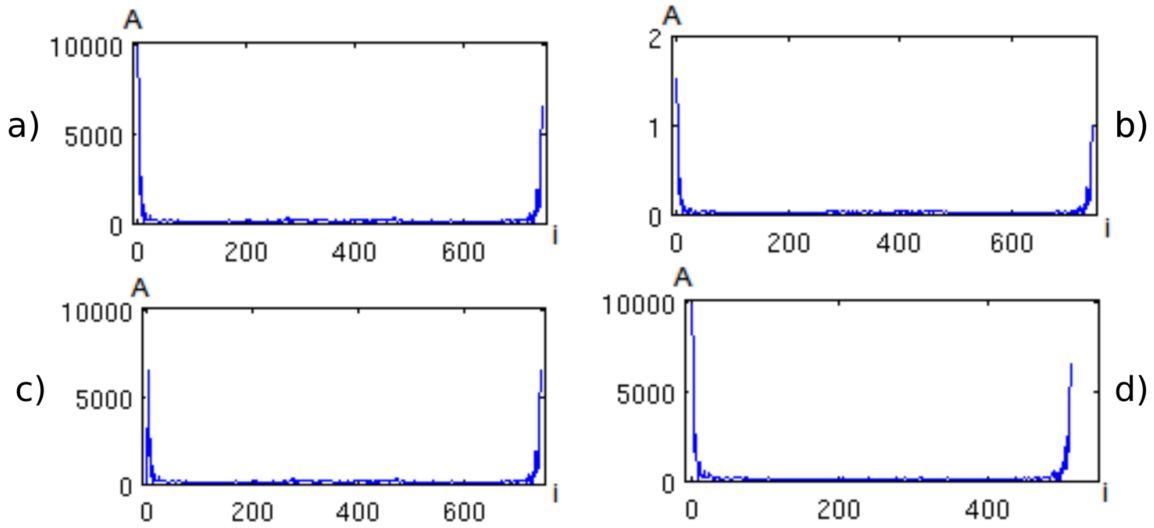
(ii) 100

(iii) 20

(iv) 10

Question 2

Figures b)-d) depict the amplitude of each component of a complex-valued Fourier descriptor obtained from the original descriptor (amplitude shown in Figure a)) by several transformations.



Denote for each case (b-d) to which effects the computed descriptor is invariant or robust.

	i)translation	ii)rotation	iii) scale	iv) noise
b)			invariant	
c)	invariant			
d)				invariant

Note: roration could be invariant for each case as we can't see it in amplitude

Qinshan Dai, 406464, qinshan.dai@campus.tu-berlin.de ,Elektrotechnik, Master;
Yang Li, 408458, yang.li@campus.tu-berlin.de, Automotive Systems, Master;
Raphael Schymczyk, 349690, raphael1@mail.tu-berlin.de, Wirtschaftsingenieurwesen, Master;
Karel Smejkal, 388638, karel.smejkal@campus.tu-berlin.de, Computer Science, Master