



**Requisition Letter**

Date: 20.02.2019

From  
Dr. K.P.Kaliyamurthie,  
Professor & Head,  
Department of CSE,  
Bharath Institute of Higher Education and Research,  
Chennai

To  
The Dean Engineering,  
Bharath Institute of Higher Education and Research,  
Chennai

Respected sir

Subject: Request of Permission to conduct a value-added course on “**Computer Vision for Image Processing**” -Reg

With reference to above subject, I would like to bring to your kind notice that, our department interested to organize value added course “**Computer Vision for Image Processing**” -Reg in our campus premises on **22.02.2016**, students would be participating in this course. We request you kindly to give permission to organize this event.

Venue: **CSE Smart Room**

Timing: 2:00 PM to 4:00 PM(AN) and Saturday (FN&AN).

Submitted to Principal for approval to organize this value-added course.

**HOD**

HEAD OF DEPARTMENT  
Department of Computer Science & Engg.,  
Bharath Institute of Higher Education & Research  
(Declared as Deemed to be University U/S 3 of UGC Act, 1956)  
Chennai-600 073. INDIA

**DEAN ENGINEERING**





# Bharath

**INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

(Declared as Deemed-to-be University under section 3 of UGC Act 1956)

## CIRCULAR

20.02.2019

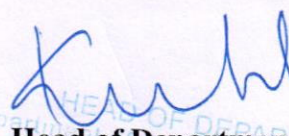
The School of computing, Bharath Institute of Higher Education and Research is planned to conduct a certification value added course on **Computer vision for Image processing** for the benefit of II, III and IV year students. This course is scheduled from 22.02.2019 for 28hours which includes theory and practical. The timings are 2:00 PM to 4:00 PM from Friday (AN) and Tuesday (AN).

All Registered Students must attend all the classes without fail. The following faculty members are assigned to handle the course. S.NO	Name of the Faculty	Designation
1	D.Jeya Priya	Assistant Professor
2	C.Geetha	Assistant Professor

To

Copy to CSE

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HEAD OF DEPARTMENT  
Department of Computer Science & Engg  
Bharath Institute of Higher Education & Research  
(Declared as Deemed to be University U/S 3 of UGC Act, 1956)  
Chennai-600 073. INDIA





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## CERTIFICATE COURSE ON COMPUTER VISION FOR IMAGE PROCESSING

Date of Introduction of the Course: 22.02.2019

### COURSE SYLLABUS

#### 1. Image Formation and Coordinate Transformations

Camera Matrix, Motion/Stereo Pin-hole model, Human eye / cognitive aspects of colour / 3D space; illumination;

#### 2. Sampling and Quantization:

Coordinate transformations and camera parameters, HW Jan3-10: 3D transformations problem (theory);

#### 3. Introduction to OpenCV:

Image Data Structure, Coding format

#### 4. Image Processing

Noise Removal, Blurring, Edge Detection:

Canny, Gaussian, Gabor, Texture, Edges, Curvature, Corner Detection.

5. Motion Estimation: Horn-Schunk Optical Flow Formulation, Euler-Lagrange formulation : Calculus of variations theory, Structure Recovery from Motion [Kanade]

#### 6. Segmentation :

Concept of Figure vs. Ground, Watershed, Change Detection, Background Subtraction, Texture Segmentation Gaussian Mixture Models , Applications in Color/Motion based Image Segmentation, Background Modeling and Shape Clustering

#### 7. Machine Learning techniques in Vision:

Bayesian Classification, Maximum Likelihood Methods, Neural Networks; Non-parametric models;

#### 8. Manifold estimation:

Support Vector Machines ; Temporal sequence learning, HW: Classifiers for edges; object categories

9. Introduction to Object Tracking : Exhaustive vs. Stochastic Search Shapes, Contours, and Appearance Models. Mean-shift tracking; Contour-based models

#### 10. Object Modeling and Recognition:



### 11. Scale Space:

**Linear Scale Space, Extrema in scale space , HW: Haar-based modeling of object classes**

### 12. Local Structure

**2D Taylor Series, Gaussian Derivatives, Geometrical Invariants, Histogram of Gradients**

### 13. Camera calibration:

CRF segmentation, object modelling, activity recognition, image manifolds

### 14. Applications:

Surveillance, Object detection,

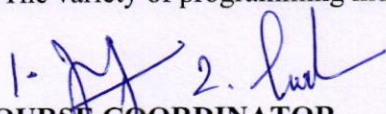
## **COURSE OBJECTIVES**

In this course we plan to give students an overview of the field of Image processing, and an in-depth study into its enabling technologies and main building blocks. Students will gain hands-on experience solving relevant problems through projects that will utilize existing public cloud tools. It is our objective that students will develop the skills needed to become a practitioner or carry out research projects in this domain.

**Specifically, the course has the following objectives:**

#### **Students will learn**

- 1) The fundamental ideas behind Image processing, the evolution of the paradigm, its applicability; Benefits, as well as current and future challenges;
- 2) The basic ideas and principles in data centre design; Image processing techniques and computer vision;
- 3) Different CPU, memory and I/O virtualization techniques that serve in offering software, computation and storage services on the cloud; Software Defined Networks (SDN) and Software Defined Storage (SDS);
- 4) The variety of programming models and develop working experience in several of them.

  
**COURSE COORDINATOR**

  
**HEAD OF THE DEPARTMENT**

Department of Computer Science & Engineering  
P. J. Somaiya Institute of Higher Education & Research  
(Recognized as Deemed to be University U/S 3 of UGC Act 1956)  
Chennai-600 073. INDIA





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**INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

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## CERTIFICATE COURSE ON COMPUTER VISION FOR IMAGE PROCESSING

**Date of Introduction of the Course: 22.02.2019**


The timings are 2.00 PM to 4: PM from Friday (AN) and Tuesday (AN).

### Time Table & Lesson plan

CLAS S	DATE	TOPIC
1,2	22-02-2019(A N)	1. Image Formation and Coordinate Transformations  Camera Matrix, Motion/Stereo Pin-hole model, Human eye / cognitive aspects of colour / 3D space; illumination;
3,4	25-02-2019 (AN)	2. Sampling and Quantization Coordinate transformations and camera parameters HW Jan3-10: 3D transformations problem (theory);
5,6	26-02-2019(A N)	3. Introduction to OpenCV Image Data Structure, Coding format
7,8	27-02-2019 (AN)	4. Image Processing Noise Removal, Blurring, Edge Detection: Canny ,Gaussian,Gabor,Texture,Edges,Curvature,Corner Detection.
9,10	28-02-2019 (AN)	5.Motion Estimation:Horn-Schunk Optical Flow Formulation,Euler-Lagrange formulation : Calculus of variations theory,Structure Recovery from Motion [Kanade]
11,12	01-03-2019 (AN)	6. S.egmentation - Concept of Figure vs. Ground, Watershed, Change Detection, Background Subtraction, Texture SegmentationGaussian Mixture Models , Applications in Color/Motion based ImageSegmentation, Background Modeling and Shape Clustering



13,14	01-03-2019 (AN)	7. Machine Learning techniques in Vision: Bayesian Classification, Maximum Likelihood Methods, Neural Networks; Non-parametric models;
15,16	04-03-2019 (FN)	8. Manifold estimation Support Vector Machines ; Temporal sequence learning,HW: Classifiers for edges; object categories
17,18	05-03-2019 (AN)	9. Introduction to Object Tracking: Exhaustive vs.Stochastic Search Shapes, Contours, and Appearance Models. Mean-shift tracking; Contour-based models
19,20	06-03-2019 (AN)	10. Object Modeling and Recognition Fundamental matrix / Epipolar geometry,Adaboost approaches: Face Detection / Recognition Large Datasets; Attention models.
21,22	07-03-2019 (AN)	11 Scale Space  Linear Scale Space,Extrema in scale space , HW: Haar-based modeling of object classes
23,24	08-03-2019 (AN)	12. . Local Structure  2DTaylorSeries,GaussianDerivatives,Geometrical,Invariants,Histogram of Gradients
25,26	11-03-2019 (AN)	13. camera calibration: CRF segentation, object modelling,activity recognition,image manifolds
27,28	12-03-2019 (AN)	14. Applications: Surveillance, Object detection,

  
COURSE COORDINATOR

  
HEAD OF THE DEPARTMENT  
(Declared as Deemed to be University by S.O. 3 of 1986 Act, 1956)  
Chennai-600 073, INDIA





# Bharath

**INSTITUTE OF HIGHER EDUCATION AND RESEARCH**

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**CERTIFICATE COURSE ON COMPUTER VISION FOR IMAGE PROCESSING**

**Date of Introduction of the Course: 02.02.2019**

## School of Computing

### Registered Students Name List

S.NO	REG.NO	NAME OF THE STUDENT
1	U19CS462	KARRE SAI TEJA GOUD
2	U19CS463	KARRI NIKHIL
3	U19CS464	KARRI SIVA PRASAD
4	U19CS465	KARTHICKRAJA K
5	U19CS466	KARTHIKA SJ
6	U19CS467	KARTHIKEYAN K
7	U19CS484	KATTAMURI ABHISHEK
8	U19CS488	KEESARI SHANKAR REDDY
9	U19CS489	KEETHA DEEPAK
10	U19CS490	KEETHA MANDIDEEP
11	U19CS491	KESHAPALLY NANDEESHWAR REDDY
12	U19CS492	KHISHORTHAR P A
13	U19CS493	KILARI VENKATESHWARLU
14	U19CS494	KIRUTHIK SHARMA K
15	U19CS495	KISHORE S
16	U19CS496	KOCHERLA SAI SIVA SANKAR
17	U19CS497	KODARI SAI CHARAN
18	U19CS498	KODE SAI VARDHAN
19	U19CN023	KONDA SRINIVASA REDDY
20	U19CN024	KONDAVEETI BALAJI
21	U19CN025	KONDAVETI SARVAN NAGA PAVAN
22	U19CN026	KONDIBOINA MADHU KUMAR
23	U19CN027	KONDU CHARITHA REDDY
24	U19CN028	KONDUPALLI GREESHMANTH KUMAR R
25	U19CN029	KONDURU KALYAN VARMA
26	U19CN030	KONETI SAI ANVITHA



27	U19CN031	KOPANATHI SIVAJI
28	U19CN032	KORRAPATI BHUVANESWARA CHARI
29	U19CN033	KORUKONDA LOKESH SATYA VEERASAI
30	U19CN380	SAREDDY SRIKANTH REDDY
31	U19CN381	SAREDDY VENKATA SUBBA REDDY
32	U19CN385	SATHI VAMSI KRISHNA REDDY
33	U19CN386	SATHISH KUMAR M
34	U19CN387	SATRAM DINESH BABU
35	U19CN388	SATTI BHAVYA SRI

**COURSE COORDINATOR**

**HEAD OF THE DEPARTMENT**

Department of Computer Sci & Engg.,  
Bharath Institute of Higher Education & Research  
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Chennai-600 073. INDIA





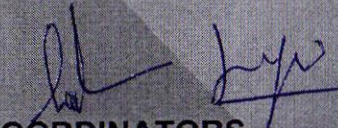
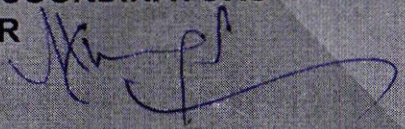
**Bharath**  
INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed-to-be University under section 3 of UGC Act 1956)

## CERTIFICATE OF PARTICIPATION

This certificate is presented to

K KARTHICK RAJ

For actively participating in the value added course "**COMPUTER VISION FOR  
IMAGE PROCESSING**" Conducted by School of Computing, BIHER from  
22.02.2019 to 12.03.2019.

  
COURSE COORDINATORS  
DIRECTOR 

  
HEAD OF THE DEPARTMENT



# COURSE FEEDBACK FORM

Academic Year		2018-2019					
Term		Even Sem					
Course Number							
Course Title		Computer Vision for Image Processing					
Number of Credits		4					
Type of Course	Regular		Elective		Add-on	<input checked="" type="checkbox"/>	

<b>I. Information on the Respondent: (Tick (✓) Appropriately)</b>									
1.	<b>Percentage of classes attended</b>								
	0-20		20-40		40-60		60-80	<input checked="" type="checkbox"/>	80-100
2.	<b>Number of hours per week spent on the course (Other than lecture hours)</b>								
	0-2		2-4		4-6	<input checked="" type="checkbox"/>	6-8		8-10
3.	<b>Preparation for the course by the student:</b>								
	(i)	Have done part of this course earlier						Yes	
	(ii)	Has adequate prior exposure to the prerequisites						Yes	
	(iii)	Had to pickup relevant additional topics through concurrent study						Yes	
	(iv)	Have no exposure to the background material						Yes	
4.	<b>The expectations for taking the course by the student are:</b>							Yes	
	(a)	Enhance by skill base in the area of specializations						Yes	
	(b)	Get exposed to a relevant subject						Yes	
	(c)	Curiosity						Yes	
	(d)	Better Employment Opportunity						Yes	
	(e)	Complete Course requirements						Yes	
	(f)	To Improve CGPA						Yes	

<b>About the Instructor: Information on the Respondent: (Tick (✓) Appropriately)</b>					
	A	B	C	D	E
1.	Pace of the Teaching/lecture	<input checked="" type="checkbox"/>			
2.	Comment of the Subject			<input checked="" type="checkbox"/>	
3.	Clarity of expression		<input checked="" type="checkbox"/>		
4.	Level of preparation		<input checked="" type="checkbox"/>		
5.	Level of interaction			<input checked="" type="checkbox"/>	
6.	Accessibility outside the class			<input checked="" type="checkbox"/>	
7.	Others (please specify)		<input checked="" type="checkbox"/>		

<b>A: Excellent</b>		<b>B: Very Good</b>		<b>C: Good</b>		<b>D: Satisfactory</b>		<b>E: Poor</b>	
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**HEAD OF THE DEPARTMENT**

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 Bharath Institute of Higher Education & Research  
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 Chennai-600 073, INDIA



# COURSE FEEDBACK FORM

Academic Year		2018-2019					
Term		Even Sem					
Course Number							
Course Title		Computer Vision for Image processing					
Number of Credits		4					
Type of Course	Regular		Elective		Add-on		✓

<b>I.</b>	<b>Information on the Respondent: (Tick (✓) Appropriately)</b>							
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1.	<b>Percentage of classes attended</b>							
	0-20		20-40		40-60		60-80 ✓	80-100

2.	<b>Number of hours per week spent on the course (Other than lecture hours)</b>							
	0-2		2-4		4-6 ✓	6-8		8-10

3.	<b>Preparation for the course by the student:</b>							
	(i)	Have done part of this course earlier						yes
	(ii)	Has adequate prior exposure to the prerequisites						yes
	(iii)	Had to pickup relevant additional topics through concurrent study						yes
	(iv)	Have no exposure to the background material						yes

4.	<b>The expectations for taking the course by the student are:</b>							
	(a)	Enhance by skill base in the area of specializations						yes
	(b)	Get exposed to a relevant subject						yes
	(c)	Curiosity						yes
	(d)	Better Employment Opportunity						yes
	(e)	Complete Course requirements						yes
	(f)	To Improve CGPA						yes

<b>About the Instructor: Information on the Respondent: (Tick (✓) Appropriately)</b>					
	A	B	C	D	E
1.	Pace of the Teaching/lecture	✓			
2.	Comment of the Subject	✓			
3.	Clarity of expression			✓	
4.	Level of preparation		✓		
5.	Level of interaction			✓	
6.	Accessibility outside the class		✓		
7.	Others (please specify)		✓		

A: Excellent		B: Very Good		C: Good		D: Satisfactory		E: Poor	
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**HEAD OF THE DEPARTMENT**

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COMPUTER VISION FOR IMAGE PROCESSING





