Aditya College of Engineering & Technology

Aditya Nagar, ADB Road, Surampalem - 533437

DEPARTMENT OF INFORMATION TECHNOLOGY

B. Tech 4/4, II-SEMESTER

II Semester 2020-21

IMAGE SEGMENTATION AND OBJECT DETECTION USING DEEP LEARNING

ABSTRACT

Image segmentation is a critical process in computer vision. It involves dividing a visual input into segments to simplify image analysis. Segments represent objects or parts of objects, and comprise sets of pixels, or "super-pixels". Image segmentation sorts pixels into larger components, eliminating the need to consider individual pixels as units of observation. There are three levels of image analysis: Classification • Object detection • Segmentation

Mask R-CNN is the current state-of-the-art for image segmentation that can create a pixel-wise mask for each object in an image. It is an extension of the popular Faster R-CNN object detection architecture. This includes taking an image as input and passing it to the ConvNet, which returns the feature map for that image. Region proposal network (RPN) is applied on these feature maps. This returns the object proposals along with their objectness score. A RoI pooling layer is applied on these proposals to bring down all the proposals to the same size. Finally, the proposals are passed to a fully connected layer to classify and gives three outputs for each object in the image: its class, bounding box coordinates, and object mask.

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Course Outcomes (COs)

Course Outcomes
After completing this course, the student will be able to:

CO Number	CO Statement	Taxonomy
CO1	Demonstrate the technical knowledge to identify problems in the field of Information Technology and its allied areas.	Understand
CO2	Use literature to identify the objective, scope and the concept of the work.	Apply
CO3	Analyze and formulate technical projects with a comprehensive and systematic approach.	Analyse
CO4	Identify the modern tools to implement technical projects.	Evaluate
CO5	Design engineering solutions for solving complex engineering problems.	Create
CO6	Develop effective communication skills, professional behaviour and team work.	Understand

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CO-PO/PSO MATRIX:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	1	2		1			3	2	2	2	3	2	
CO2	2	1	2	2	1	1		1	3	2	2	2	3	3	1
CO3	1	1	3	3	1	1			3	2	2	2	3	2	1
CO4	3	1	3	2	3	1		2	3	2	2	2	2	3	2
CO5	3	2	3	3	3	1		1	3	2	3	2	2	1	1
CO6	1	1	1	2	1	1		2	2	3	2	2	1	1	2
Course	2.2	1.3	2.2	2.3	1.5	1.0		1.0	2.8	2.2	2.2	2.0	2.3	2.0	1.2

PO1	Engineering Knowledge	PO7	Environment & Sustainability
PO2	Problem Analysis	PO8	Ethics
PO3	Design / Development of Solutions	PO9	Individual & Team Work
PO4	Conduct Investigations of complex problems	PO10	Communication Skills
PO5	Modern Tool usage	PO11	Project Management & Finance
PO6	Engineer & Society	PO12	Life-long Learning

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