



Sri Indu

College of Engineering & Technology

UGC Autonomous Institution

Recognized under 2(f) & 12(B) of UGC Act 1956,

NAAC, Approved by AICTE &

Permanently Affiliated to JNTUH



HANDOUT

IV Year I Semester

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
(ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING)

ACADEMIC YEAR 2025-2026

DEEP LEARNING

SYLLABUS

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

(An Autonomous Institution under UGC, New Delhi)

B.Tech. - IV Year – I Semester

L	T	P	C
3	0	0	3

(R22C5M4111) DEEP LEARNING**Course Objectives:** Students will be able:

1. To understand complexity of Deep Learning algorithms and their limitations
2. To be capable of performing experiments in Deep Learning using real-world data.

Course Outcomes:

1. Implement deep learning algorithms, understand neural networks and traverse the layers of data
2. Learn topics such as convolutional neural networks, recurrent neural networks, training deep networks and high-level interfaces
3. Understand applications of Deep Learning to Computer Vision
4. Understand and analyze Applications of Deep Learning to NLP

UNIT - I

Introduction: Feed forward Neural networks, Gradient descent and the back-propagation algorithm, Unit saturation, the vanishing gradient problem, and ways to mitigate it. ReLU Heuristics for avoiding bad local minima, Heuristics for faster training, Nestors accelerated gradient descent, Regularization, Dropout

UNIT - II

Convolutional Neural Networks: Architectures, convolution/pooling layers, **Recurrent Neural Networks:** LSTM, GRU, Encoder Decoder architectures. **Deep Unsupervised Learning:** Auto encoders, Variational Auto-encoders, Adversarial Generative Networks, Auto-encoder and DBM **Attention and memory models, Dynamic Memory Models**

UNIT- III

Applications of Deep Learning to Computer Vision: Image segmentation, object detection, automatic image captioning, Image generation with Generative adversarial networks, video to text with LSTM models, Attention Models for computer vision tasks

UNIT -IV

Applications of Deep Learning to NLP: Introduction to NLP and Vector Space Model of Semantics, Word Vector Representations: Continuous Skip-Gram Model, Continuous Bag-of-Words model (CBOW), Glove, Evaluations and Applications in word similarity

UNIT -V

Analogy reasoning: Named Entity Recognition, Opinion Mining using Recurrent Neural Networks: Parsing and Sentiment Analysis using Recursive Neural Networks: Sentence Classification using Convolutional Neural Networks, Dialogue Generation with LSTMs.

TEXT BOOKS:

1. Deep Learning by Ian Goodfellow, Yoshua Bengio and Aaron Courville, MIT Press.
2. The Elements of Statistical Learning by T. Hastie, R. Tibshirani, and J. Friedman, Springer.
3. Probabilistic Graphical Models. Koller, and N. Friedman, MIT Press.

REFERENCE BOOKS:

1. Bishop, C.M., Pattern Recognition and Machine Learning, Springer, 2006.
2. Yegnanarayana, B., Artificial Neural Networks PHI Learning Pvt. Ltd, 2009.
3. Golub, G., H., and Van Loan, C. F., Matrix Computations, JHU Press, 2013.
4. Satish Kumar, Neural Networks: A Classroom Approach, Tata McGraw-Hill Education, 2004.

**Prepared
on
2025**

R22CSM4111 – DEEP LEARNING

Year/Sem./Section	IV/I
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Dr. B. KARUNALAH Associate Professor

Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
			From	To				
UNIT-I			12					
1.1	Feed forward Neural networks	T1	11	13	Black board	01		CO1/L4
1.2	Gradient descent algorithm	T1	14	16	Black board	01		CO1/L2
1.3	the back-propagation algorithm	T1	18	19	Black board	01		CO1/L1
1.4	Unit saturation	T1	21	22	Black board	01		CO1/L2
1.5	the vanishing gradient problem,	T1	24	25	Black board	01		CO1/L2
1.6	ways to mitigate it.	T1	27	29	Black board	01		CO1/L2
1.7	ReLU Heuristics for avoiding bad local minima	T2	30	31	Black board	01		CO1/L2
1.8	Heuristics for faster training	T1	38	40	Black board	01		CO1/L2
1.9	Nesters accelerated gradient descent	T1	43	45	Black board	02		CO1/L2
1.10	Regularization	T1	43	45	Black board	02		CO1/L2
1.11	Dropout	T1	43	45	Black board	02		CO1/L2
1.12	Revision	T1	43	45	Black board	02		CO1/L2
	Review	Signature of the HOD/Coordinator						

	SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY			Prepared on 2025
	LESSON PLAN (Regulation :R22) Department of AIML			
	Sub. Code & Title	R22CSM4111 – DEEP LEARNING		
	Academic Year :2025-26	Year/Sem./Section	IV/I	
Faculty Name & Designation	Dr. B. KARUNAIAH Associate Professor			

Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RB T
			From	To				
UNIT-II 15								
2.1	Architectures,	T1	78	79	Black board	01		CO2/L4
2.2	convolution/pooling layers	T1	81	83	Black board	01		CO2/L5
2.3	Recurrent Neural Networks	T2	85	87	Blackboard	01		CO2/L1
2.4	LSTM	T1	91	93	Presentation	01		CO2/L6
2.5	GRU	T1	95	97	Presentation	02		CO2/L2
2.6	Encoder Decoder architectures	T1	98	99	Black board	01		CO2/L2
2.7	Deep Unsupervised Learning	T1	98	99	Black board	01		CO2/L2
2.8	Auto encoders	T1	98	99	Black board	01		CO2/L2
2.9	Variational Auto-encoders,	T1	98	99	Black board	01		CO2/L2
2.10	Adversarial Generative Networks	T1	98	99	Black board	01		CO2/L2
2.11	Auto-encoder and	T1	98	99	Black board	01		CO2/L2
2.12	DBM Attention and memory models	T1	98	99	Black board	01		CO2/L2
2.13	Dynamic Memory Models	T1	98	99	Black board	01		CO2/L2

2.14	Revision	T1	98	99	Black board	01		CO2/L2
2.15	Revision	T1	98	99	Black board	01		CO2/L2

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	LESSON PLAN			
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R22CSM4111 – DEEP LEARNING

Year/Sem./Section IV/I

Dr. B. KARUNAIAH Associate Professor

Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
			From	To				
UNIT-IV								
12								
4.1	Introduction to NLP and Vector Space Model of Semantics	T1	158	160	Black board	01		CO5/L2
4.2	Introduction to NLP and Vector Space Model of Semantics	W5	175	189	Presentation	01		CO5/L4
4.3	Word Vector Representations	T1	200	201	Black board	01		CO5/L6
4.4	Continuous Skip-Gram Model,	T1	206	210	Black board	01		CO5/L2
4.5	Continuous Skip-Gram Model,	T1	530	532	Black board	01		CO5/L2
4.6	Continuous Bag-of-Words model (CBOW),	W6			Presentation	01		CO5/L4
4.7	Continuous Bag-of-Words model (CBOW),	T1	138	140	Black board	01		CO3/L3
4.8	Glove	T1	138	140	Black board	01		CO3/L3
4.9	Evaluations and Applications in word similarity	T1	138	140	Black board	01		CO3/L3
4.10	Evaluations and Applications in word similarity	T1	138	140	Black board	01		CO3/L3
4.11	Revision	T1	138	140	Black board	01		CO3/L3
4.12	Revision	T1	138	140	Black board	01		CO3/L3
	Review	Signature of the HOD/Coordinator						

**Prepared
On
2024**

Academic Year: 2025-26	Year/Sem./Section	II/I
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Faculty Name & Designation	Dr. B. KARUNAIAH Associate Professor
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Unit/ Item No.	Topic (s)	Book Reference	Page (s)		Teaching Methodology	Proposed No. of Periods	Actual Date of Handled	CO/RBT
			From	To				
UNIT-V					12			
5.1	Named Entity Recognition,	T1	737	741	Presentation	01		CO6/L2
5.2	Named Entity Recognition,	T1	737	741	Presentation	01		CO6/L2
5.3	Opinion Mining using Recurrent Neural Networks	T1	743	790	Black board	01		CO6/L2
5.4	Opinion Mining using Recurrent Neural Networks	T1	743	790	Black board	01		CO6/L1
5.5	Parsing and Sentiment Analysis using Recursive Neural Networks	T1	743	790	Black board	01		CO6/L2
5.6	Parsing and Sentiment Analysis using Recursive Neural Networks	T1	743	790	Presentation	01		CO6/L1
5.7	Sentence Classification using Convolutional Neural Networks,	T1	819	822	Black board	01		CO6/L1
5.8	Sentence Classification using Convolutional Neural Networks,	T1	820	832	Presentation	01		CO6/L2
5.9	Dialogue Generation with LSTMs	T1	820	832	Presentation	01		CO6/L2
5.10	Dialogue Generation with LSTMs	T1	820	832	Presentation	01		CO6/L2
5.11	Revision	T1	820	832	Presentation	01		CO6/L2
5.12	Revision	T1	820	832	Presentation	01		CO6/L2
	Review	Signature of the HOD/Coordinator						

LIST OF TEXT BOOKS AND REFERENCES

TEXT BOOKS:

- T1. Deep Learning by Ian Goodfellow, Yoshua Bengio and Aaron Courville, MIT Press.
- T2. The Elements of Statistical Learning by T. Hastie, R. Tibshirani, and J. Friedman, Springer.
- T3. Probabilistic Graphical Models. Koller, and N. Friedman, MIT Press.

REFERENCE BOOKS:

- R1. Bishop, C.M., Pattern Recognition and Machine Learning, Springer, 2006.
- R2. Yegnanarayana, B., Artificial Neural Networks PHI Learning Pvt. Ltd, 2009.
- R3. Golub, G., H., and Van Loan, C. F., Matrix Computations, JHU Press, 2013.
- R4. Satish Kumar, Neural Networks: A Classroom Approach, Tata McGraw-Hill Education, 2004.

Web links

- W1: <https://nptel.ac.in/courses/106101061/2>
- W2: www.tutorialspoint.com/software_testing_dictionary/software_requirement_specification.htm
- W3: https://elsmar.com/pdf_files/cmmi-overview05.pdf
- W4: www.tutorialspoint.com/uml/uml_basic_notations.html

	SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY			Prepared on 2025
	LESSON PLAN (Regulation :R22) Department of AIML			
	Sub. Code & Title	R22CSM4111 – DEEP LEARNING		
	Academic Year: 2025-26	Year/Sem./Section	IV/I	
Faculty Name & Designation	Dr. B. KARUNAIAH Associate Professor			

UNIT-1 : Introduction			
	Multiple choice Questions	BT Level	Course Outcome
1C-1	In the context of neural networks, the main purpose of the back propagation algorithm is to: A) Propagate the error backward through the network to update the weights B) Calculate the output of each layer in the forward pass C) Initialize weights randomly D) Perform data augmentation during training	L4	CO1
1C-2	Which of the following best describes a feed forward neural network (FNN)? A) A network where connections can form cycles B) A network where information moves only in one direction: from input to output C) A network that uses recurrent connections for time-series prediction D) A network designed for convolution operations	L1	CO1

1C-3	In a Feed forward Neural Network, which of the following components is responsible for introducing non-linearity? A) Bias B) Activation function C) Weight D) Output layer	L1	CO1
1C-4	Which of the following heuristics is commonly used to avoid bad local minima in neural network training? A) Batch normalization B) Random initialization of weights C) Dropout D) Leaky ReLU activation function	L1	CO1
1C-5	The concept of "simulated annealing" in optimization can help: A) Prevent overfitting B) Avoid getting stuck in local minima C) Speed up training D) Prevent vanishing gradients	L4	CO1
1C-6	Which technique is commonly used to mitigate the vanishing gradient problem in deep neural networks? A) Use of smaller learning rates B) Using Leaky ReLU or ELU instead of standard ReLU C) Increasing the number of layers D) Using more hidden units in each layer	L1	CO1
1C-7	Which of the following techniques helps in speeding up neural network training by normalizing the inputs to each layer?	L1	CO1

	A) Batch normalization B) Early stopping C) Learning rate annealing D) Dropout		
1C-8	What is the primary goal of regularization in neural networks? A) To reduce the size of the training data B) To prevent the model from over fitting to the training data C) To increase the number of layers D) To speed up the training process	L5	CO1
1C-9	Which of the following activation functions is least likely to suffer from the vanishing gradient problem? A) ReLU B) Sigmoid C) Tanh D) Softmax	L1	CO1
1C-10	Which of the following regularization methods penalizes large weights in the model? A) L2 regularization B) L1 regularization C) Dropout D) Data augmentation	L2	CO1
1C-11	Dropout works by: A) Reducing the learning rate B) Randomly setting the output of some neurons to zero during training C) Increasing the weight values of certain neurons D) Adding noise to the inputs	L5	CO1

1C-12	Which activation function is particularly vulnerable to unit saturation? A) Re LU B) Sigmoid C) Tan h D) Soft max	L1	CO1
1C-13	In Nesterov Accelerated Gradient Descent (NAG), the key advantage over standard momentum is: A) It uses the current gradient at each step B) It first makes a "look ahead" step before computing the gradient C) It uses a smaller learning rate D) It removes the need for a learning rate schedule	L1	CO1
1C-14	Which of the following is the main mathematical technique used in the back propagation algorithm to update the weights of a neural network? A) Monte Carlo Simulation B) Chain rule of derivatives C) Gradient of the activation function D) Cross-validation	L1	CO1
1c-15	Nesterov accelerated gradient descent is particularly effective because: A) It avoids using a learning rate B) It gives faster convergence by adjusting momentum C) It does not require backpropagation D) It eliminates the need for a validation set	L2	CO1
1C-16	In gradient descent, what is the primary goal? A) To increase the cost function	L1	CO1

	B) To minimize the cost function by adjusting weights C) To maximize the error rate D) To adjust the activation function		
1C-17	Unit saturation in a neural network is most commonly associated with: A) Neurons reaching a point where they stop responding to input variations B) The neural network's ability to generalize C) Convergence to the global minimum D) The gradient being very large	L1	CO1
1C-18	Which of the following regularization techniques helps reduce overfitting by randomly dropping units during training? A) L2 regularization B) Dropout C) Batch normalization D) Early stopping	L1	CO1
1C-19	What is the vanishing gradient problem? A) Gradients become too large during training B) Gradients become very small, making it difficult for weights to update during training C) Gradients oscillate and prevent convergence D) Gradients vanish completely, stopping the learning process	L5	CO1
1C-20	What does the "learning rate annealing" technique do during training? A) Reduces the learning rate gradually as training progresses B) Increases the learning rate gradually to escape local minima C) Increases the batch size for each epoch D) Reduces the batch size during training	L6	CO1

Fill in the blanks			
1F-1	In a feed forward neural network, information flows from the input layer to the _____ layer without any cycles.	L1	CO1
1F-2	Activation functions like sigmoid or ReLU introduce _____ into the network, allowing it to learn complex patterns.	L1	CO1
1F-3	Feed forward neural networks are also called _____ neural networks.	L2	CO1
1F-4	The algorithm used to minimize the loss function by updating weights iteratively is called _____.	L1	CO1
1F-5	In the back propagation algorithm, the error is propagated from the _____ layer to the _____ layer.	L1	CO1
1F-6	_____ gradient descent uses the entire dataset to compute the gradient in each update.	L1	CO1
1F-7	The vanishing gradient problem often occurs when using activation functions like _____.	L1	CO1
1F-8	The vanishing gradient problem can make training _____ networks very difficult.	L2	CO1
1F-9	In unit saturation, the neuron's output changes very little even for _____ changes in input.	L2	CO1
1F-10	One heuristic to avoid bad local minima is to initialize weights _____ rather than with zeros.	L1	CO1
1F-11	L2 regularization is also known as _____ decay.	L1	CO1
1F-12	Batch normalization can speed up training by reducing _____ in layer activations.	L1	CO1
1F-13	Regularization techniques help prevent the model from _____ the training data.	L5	CO1
1F-14	ReLU stands for _____ Linear Unit.	L1	CO1
1F-15	Gradient clipping is used to prevent the problem of _____ gradients.	L1	CO1
1F-16	SDG stands for _____	L2	CO1
1F-17	Nesterov's Accelerated Gradient Descent improves momentum by looking ahead at the _____.	L1	CO1
1F-18	The main advantage of Nesterov's method is faster and more _____ convergence.	L6	CO1
1F-19	Nesterov's update rule includes a velocity term and a _____ correction.	L4	CO1
1F-20	Dropout randomly disables a subset of _____ during each training iteration.	L1	CO1
Match the following			

1M-1	a) FNN b) ReLU c) Heuristics for Faster Training d) Dropout	i) avoids saturation in the positive region ii) from input to output—without cycles. iii) reduce co-adaptation and over fitting. iv) like using momentum	L1	CO1
1M -2	a) softmax b) sigmoid c) tanh d) ReLU	i) $\max(0, x)$ ii) $1/1 + \exp(-x)$ iii) exponential function/sum of exponentials iv) $\exp(x) - \exp(-x) / (\exp(x) + \exp(-x))$	L1	CO1
1M -3	a) AI b) ML c) DL d) Activation function	i) capture patterns ii) uses ANN iii) machines to human iv) statistical methods	L1	CO1
1M -4	a) regularization b) gradient descent c) BPN d) unit saturation	i) reaches extreme values ii) train neural network iii) reduce generalization error iv) minimize loss function	L1	CO1
1M -5	a) softmax b) sigmoid c) ReLU d) tanh	i) hidden layers ii) range between -1 and 1 iii) multi-class classification iv) binary classification	L1	CO1
5 - MARKS QUESTIONS				
1D-1.	Describe forward propagation in ANN.		L4	CO1
1D-2.	Explain about Gradient descent ?		L5	CO1
1D-3.	Explain about activation functions?		L5	CO1
1D-4.	Explain about the vanishing gradient problem?		L5	CO1
1D-5.	Describe backward propagation in ANN .		L4	CO1
1D-6.	Discuss about ReLU Heuristics for avoiding bad local minima?		L6	CO1
1D-7.	What are the differences between forward and backward propagation?		L1	CO1
1D-8	Explain the following? a). Gradient descent (b).Unit saturation		L2	CO1
1D-9	Explain the following? a). Regularization (b). Dropout		L5	CO1
1D-10	Discuss about Unit saturation?		L6	CO1
1D-11	Write short notes on Heuristics for faster training ?		L2	CO1
1D-12	Write notes on Nestors accelerated gradient descent?		L2	CO1
1D-13	Explain about Regularization?		L2	CO1

1D-14	Explain about Dropout ?	L5	CO1
1D-15	How does dropout solve the Overfitting problem?	L1	CO1

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Unit -II : Convolutional Neural Networks			
Multiple choice Questions			
2C-1	Which of the following is a key purpose of pooling layers in CNNs? A. Reduce the number of filters B. Increase computational complexity C. Reduce spatial dimensions and over fitting D. Apply non-linearity	L1	CO2
2C-2	What distinguishes GRUs from LSTMs? A. GRUs have more gates B. GRUs use max pooling C. GRUs combine the forget and input gates D. GRUs use fully connected layers	L1	CO2
2C-3	Which layer in a CNN is primarily responsible for detecting spatial hierarchies in data? A. Fully connected layer B. Pooling layer C. Convolutional layer D. Dropout layer	L1	CO2
2C-4	In an encoder-decoder architecture for sequence-to-sequence models, what is the main function of the encoder? A. To generate attention scores B. To decode the output C. To transform input sequence into a context vector	L1	CO2

	D. To optimize loss		
2C-5	What does 'stride' control in a convolutional layer? A. Number of filters B. Distance the kernel moves C. Dropout rate D. Filter size	L1	CO2
2C-6	What is the output size when a 5x5 image is passed through a 3x3 filter with stride 1 and no padding? A. 3x3 B. 2x2 C. 5x5 D. 4x4	L2	CO2
2C-7	Which of the following helps LSTMs avoid the vanishing gradient problem? A. Convolution layers B. Gradient clipping C. Forget gate D. Max pooling	L1	CO2
2C-8	Which of the following is not a component of an LSTM cell? A. Input gate B. Forget gate C. Pooling gate D. Output gate	L1	CO2
2C-9	Which of the following adds a probabilistic component to the encoder output in Autoencoders? A. GAN B. VAE C. DBN D. CNN	L1	CO2
2C-10	Which network learns to generate new data samples? A. LSTM B. CNN C. GAN D. RNN	L1	CO2
2C-11	Autoencoders aim to: A. Classify data B. Compress and reconstruct data C. Predict the next element in a sequence D. Identify clusters	L2	CO2
2C-12	In GANs, the generator's goal is to: A. Classify data accurately B. Fool the discriminator C. Minimize reconstruction error D. Encode sequences	L1	CO2
2C-13	What is a key difference between DBMs and Autoencoders? A. DBMs use convolution layers B. Autoencoders are probabilistic, DBMs are not C. DBMs are generative, Autoencoders are not D. Autoencoders are used for classification, DBMs are not	L1	CO2
2C-14	GRUs work by using main_____ “gates” to manage information . a) three b) Five	L2	CO2

	c) Two d) Four		
2C-15	An auto encoder consists of a) Encoder b) Code c) Decoder d) All of the mentioned	L1	CO2
2C-16	Which of the following best describes 'attention' in neural networks? A. Maximizing activation functions B. Assigning importance weights to input components C. Reducing dimensionality of input D. Forgetting irrelevant parts of sequences	L2	CO2
2C-17	In the Transformer model, self-attention allows each word to: A. Attend only to the previous word B. Attend to all words in the input C. Be forgotten based on gates D. Be pooled for higher-level features	L1	CO2
2C-18	LSTM architectures involves the memory cell which is controlled by_____ gates. a) Input b) Forget c) Output d) All of the mentioned	L1	CO2
2C-19	Which component in attention models calculates alignment scores? A. Output gate B. Decoder C. Softmax layer D. Score function	L5	CO2
2C-20	Dynamic memory networks primarily operate on which kind of data? A. Static images B. Video data C. Sequential or story-based input D. Tabular data	L2	CO2
Fill in the blanks			
2F-1	In CNNs, a _____ layer is used to extract local features from input images using filters.	L1	CO2
2F-2	In VAE, images using neural networks in an_____ fashion.	L1	CO2
2F-3	The process of reducing the spatial dimensions of a feature map is called _____.	L1	CO2
2F-4	In CNNs, increasing the number of _____ in deeper layers allows the network to learn more complex features.	L2	CO2
2F-5	The main difference between max pooling and average pooling is that max pooling takes the _____ value, while average pooling takes the _____.	L2	CO2
2F-6	_____is a type of neural network where the output layer has the same dimensionality as the input layer.	L1	CO2
2F-7	RNNs are designed to handle _____ data, where current inputs depend on previous ones.	L1	CO2
2F-8	LSTM networks use _____ gates to control information flow.	L2	CO2
2F-9	The three gates in an LSTM are the input gate, _____ gate, and output gate.	L1	CO2

2F-10	The _____ network in encoder-decoder architectures generates the output sequence from the context vector.	L1	CO2
2F-11	GAN aims at achieving an _____ between Generator and Discriminator.	L1	CO2
2F-12	GRU uses _____ and _____ gates.	L1	CO2
2F-13	An _____ is a neural network trained to copy its input to its output through a bottleneck.	L1	CO2
2F-14	The goal of the discriminator in a GAN is to distinguish between _____ and _____ data.	L1	CO2
2F-15	In Autoencoders, the compressed representation learned in the middle layer is often called the _____.		
2F-16	LSTM stands for _____	L1	CO2
2F-17	DCGAN which stands for _____	L1	CO2
2F-18	Compared to LSTMs, GRUs are, _____ and _____	L6	CO2
2F-19	An auto encoder consists of _____ components.	L2	CO2
2F-20	An auto encoder sometimes referred to as a _____ neural network.	L1	CO2
Match the following			
2M-1	a) Support Vector Machines b) Principal Component Analysis c) Histogram of Oriented Gradients d) Structure from Motion	i) PCA ii) SVM iii) SFM iv) HOG	L1 CO2
2M-2	a) RGB b) HSV c) CMYK d) OCR	i) Cyan, Magenta, Yellow, Black ii) Hue, Saturation, Value iii) Red, Green, Blue iv) Optical character recognition	L1 CO2
2M-3	a) LSTM b) GRU c) DCGAN d) GAN	i) Gated Recurrent Unit ii) Generative Adversarial Network iii) Long Short Term Memory iv) Deep Convolutional Generative Adversarial Network	L1 CO2
2M-4	a) LSTM b) GRU c) CNN d) RNN	i) for image processing ii) time-series iii) two gates iv) three gates	L1 CO2
2M-5	a) One-one b) One-many c) Many-one d) Many-many	i) many outputs- more inputs ii) many outputs-single input iii) only one pair iv) single output-many inputs	L1 CO2
5- MARKS QUESTIONS			
2D-1	Explain about Convolutional neural network?	L5	CO2

2D-2	What are Pooling layers?	L1	CO2
2D-3	What is a Recurrent Neural Network (RNN)?	L1	CO2
2D-4	How does Recurrent Neural Networks work?	L1	CO2
2D-5	Differentiate RNNs and feed forward networks?	L2	CO2
2D-6	Explain about GRU?	L5	CO2
2D-7	Explain the working of LSTM?	L5	CO2
2D-8	What are the differences between GRU and LSTM?	L1	CO2
2D-9	Differentiate RNN and LSTM network?	L2	CO2
2D-10	What are Generative Adversarial Networks?	L1	CO2
2D-11	Comparison Between Discriminative and Generative Models?	L2	CO5
2D-12	Explain about Auto encoders ?	L5	CO2
2D-13	Explain about Encoder Decoder architectures?	L5	CO2
2D-14	Explain about Variational Auto-encoders?	L5	CO2
2D-15	Explain about Dynamic Memory Models?	L5	
	Unit-III Applications of Deep Learning to Computer Vision		
3C-1	Which of the following models is widely used for semantic segmentation tasks? a) AlexNet b) ResNet c) U-Net d) VGG-16	L1	CO3
3C-2	In image segmentation, what does "semantic segmentation" mean? a) Identifying objects and drawing bounding boxes b) Classifying entire images c) Labeling each pixel with a class d) Assigning labels to a group of pixels	L1	CO3
3C-3	The Intersection over Union (IoU) metric in object detection is used to: a) Train GANs b) Compare model losses c) Evaluate segmentation accuracy d) Measure overlap between predicted and ground truth boxes	L1	CO3
3C-4	Which two major components are combined in image captioning models? a) CNN and GAN b) RNN and Attention c) CNN and RNN d) LSTM and SVM	L1	CO3

3C-5	What is the main purpose of a Generator in GANs? a) Classify images b) Extract features c) Generate realistic samples d) Discriminate fake and real samples	L1	CO3
3C-6	In image captioning, the CNN is typically used to: a) Generate text b) Extract image features c) Predict next word in a sentence d) Model grammar rules	L1	CO3
3C-7	Which of the following models performs object detection using a single neural network and is known for its speed? a) Faster R-CNN b) R-CNN c) YOLO d) SSD	L1	CO3
3C-8	What is the role of LSTM in video-to-text models? a) Feature extraction from video frames b) Classifying video scenes c) Capturing temporal dependencies in frames d) Generating high-resolution frames	L2	CO4
3C-9	Which loss function is typically minimized by the Generator in a GAN? a) L2 Loss b) Cross Entropy Loss c) Adversarial Loss d) Softmax Loss	L1	CO4
3C-10	What is the purpose of attention mechanisms in vision tasks? a) To speed up training b) To reduce the number of parameters c) To focus on important parts of the input d) To generate captions	L1	CO4
3C-11	Which model introduced the concept of self-attention in computer vision? a) YOLOv3 b) Vision Transformer (ViT) c) ResNet-50 d) U-Net	L1	CO4
3C-12	Which of the following is not a fundamental task in computer vision? a) Object detection b) Image classification c) Speech recognition d) Image segmentation	L1	CO3
3C-13	Which technique is commonly used for edge detection in images? a) Fourier transform b) Histogram equalization c) Canny edge detection d) Gaussian blur	L1	CO4
3C-14	Which technique is used to remove the illumination variations in images? a) Image sharpening b) Histogram equalization c) Histogram matching d) Image denoising	L1	CO4

3C-15	Which algorithm is commonly used for image super-resolution, enhancing the resolution of an image? a) K-means clustering b) Decision trees c) Support Vector Machines (SVM) d) Deep learning-based models	L1	CO4
Fill in the blanks			
3F-1	Image segmentation is the process of partitioning an image into multiple _____ or objects.	L1	CO3
3F-2	Deep learning models like _____ are widely used for semantic image segmentation tasks.	L1	CO3
3F-3	In segmentation, _____ segmentation assigns a class to each pixel in an image.	L1	CO3
3F-4	Object detection involves both classifying objects and _____ their positions in an image.	L5	CO3
3F-5	Popular deep learning models for object detection include YOLO, SSD, and _____.	L1	CO3
3F-6	he output of object detection typically includes class labels and _____ boxes.	L2	CO3
3F-7	Automatic image captioning combines convolutional neural networks and _____ networks.	L2	CO3
3F-8	In image captioning, CNNs extract visual features, while RNNs or LSTMs generate _____	L4	CO4
3F-9	The _____ model architecture uses an encoder-decoder approach for image captioning.	L4	CO3
3F-10	A GAN consists of two networks: a generator and a _____.	L4	CO3
3F-11	GANs can be used for generating realistic images, super-resolution, and image _____.	L4	CO3
3F-12	LSTM models are effective in modeling _____ data such as video sequences.	L1	CO4
3F-13	In video-to-text applications, features are extracted from video frames and passed to an _____ decoder.	L1	CO4
3F-14	GAN stands for _____	L2	CO3
3F-15	The process of describing a video in natural language is known as video _____.	L1	CO4
3F-16	Attention mechanisms help models focus on the most _____ parts of an image or sequence.	L2	CO4
3F-17	The _____ mechanism assigns weights to different parts of the input during prediction.	L1	CO4
3F-18	Attention-based models improve tasks like image captioning and visual _____ answering.	L1	CO4
Match the following			
3M-1	a) Thresholding b) Region growing c) Edge based d) Clustering	i) a threshold value is set ii) detecting edges in the image iii) group pixels into clusters iv) the image is divided into several regions	L1 CO3

3M-2	a)Support Vector Machines b)Principal Component Analysis c)Histogram of Oriented Gradients d)Structure from Motion	i) PCA ii) SVM iii) SFM iv) HOG	L1	CO3
3M-3	a) a query vector (Q) b) a key vector (K) c) a value vector (V)	i) queries are compared ii) associated with the input iii) compared with the keys	L1	CO4
3M-4	a)Support Vector Machines b)Principal Component Analysis c)Histogram of Oriented Gradients d)Structure from Motion	i) PCA ii) SVM iii) SFM iv) HOG	L1	CO4
3M-5	a) RGB b) HSV c) CMYK d) OCR	i) Cyan, Magenta, Yellow, Black ii) Hue, Saturation, Value iii) Red, Green, Blue iv) Optical character recognition	L1	CO4
5- MARK QUESTIONS				
3D-1	What are the Image Segmentation Techniques?		L1	CO3
3D-2	Explain about Image Segmentation?		L5	CO3
3D-3	Write short notes on Object Detection?		L2	CO3
3D-4	How Object Detection works?		L1	CO3
3D-5	Discuss the Advantages and Disadvantages of Object Detection?		L6	CO3
3D-6	Explain about Automatic Image Captioning?		L5	CO3
3D-7	Why Do We Need Automatic Image Captioning ?		L1	CO3
3D-8	Discuss about Application of Automatic image captioning?		L6	CO3
3D-9	Explain about Image generation with Generative adversarial networks?		L5	CO3
3D-10	Explain working principle of video-to-text conversion with LSTM models?		L5	CO4
3D-11	How to convert Video to text with LSTM models?		L1	CO4
3D-12	What are the Applications of video-to-text conversion with LSTM models?		L1	CO4
3D-13	Explain about Attention models for computer vision tasks?		L5	CO4
3D-14	What is the Purpose of Attention for computer vision tasks?		L1	CO4
3D-15	What are the Types of attention models?		L1	CO4
Unit-IV: Applications of Deep Learning to NLP				

Multiple choice questions			
4C-1	What is the main goal of Natural Language Processing (NLP)? A. Store human languages B. Translate programming languages C. Enable computers to understand and process human language D. Generate new computer languages	L1	CO5
4C-2	In the Vector Space Model of semantics, each word is represented as: A. A unique symbol B. A matrix of characters C. A point in a high-dimensional space D. A color-coded graph	L1	CO5
4C-3	The CBOW model predicts the: A. Next sentence in a paragraph B. Word given its surrounding context words C. Sentence given a keyword D. Sentiment of a review	L1	CO5
4C-4	Which of the following is NOT a word vector representation technique? A. Skip-Gram B. TF-IDF C. CBOW D. GloVe	L2	CO5
4C-5	The Skip-Gram model is designed to: A. Compress words into audio B. Predict context words given a target word C. Translate words between languages D. Summarize long texts	L1	CO5
4C-6	GloVe stands for: A. Generalized Language of Vectors B. Global Vectors for Word Representation C. Graphical Linguistic Vector Encoding D. Generic Linguistic Output Vector Engine	L1	CO5
4C-7	The GloVe model uses which of the following as its primary training input? A. Word sequences B. Dependency parses C. Word co-occurrence statistics	L1	CO5

	D. Sentiment scores		
4C-8	Which of the following best describes a key difference between GloVe and word2vec? A. word2vec uses co-occurrence matrix, GloVe does not B. GloVe uses co-occurrence matrix, word2vec does not C. Both use same loss function D. GloVe uses backpropagation, word2vec does not	L5	CO5
4C-9	One major advantage of using word embeddings like word2vec or GloVe is: A. They reduce training time B. They eliminate the need for grammar rules C. They capture semantic similarity between words D. They store data in the cloud	L1	CO5
4C-10	In vector space models, cosine similarity is used to: A. Find syntactic structure B. Compare word frequency C. Measure semantic similarity between vectors D. Generate random word embeddings	L1	CO5
4C-11	Which layer is shared between Skip-Gram and CBOW models in word2vec? A. Output layer B. Hidden (embedding) layer C. Input layer D. Softmax layer	L4	CO5
4C-12	Word similarity tasks aim to measure: A. How often words occur in a document B. The distance between documents C. The semantic closeness of word meanings D. How a word is pronounced	L4	CO5
4C-13	In word2vec, which of the following helps avoid computing softmax over the entire vocabulary? A. One-hot encoding B. Skip connections C. Negative sampling D. Max pooling	L5	CO5
4C-14	Evaluating word vectors on analogy tasks (e.g., king - man + woman $\approx$ queen) tests: A. Syntactic parsing B. Logical reasoning	L1	CO5

	C. Semantic arithmetic and vector relationships D. Sentence generation		
4C-15	Which of the following is an application of word similarity scores in NLP? A. Image classification B. Document summarization C. Machine translation D. Search query expansion	L1	CO5
Fill in the blanks			
4F-1	The Vector Space Model represents words as _____ in a high-dimensional space.	L1	CO5
4F-2	In NLP, the assumption that words with similar meanings occur in similar contexts is known as the _____ hypothesis.	L1	CO5
4F-3	_____ common method of quantifying word co-occurrence in early models is the use of a _____ matrix.	L2	CO5
4F-4	Word similarity in vector space models is often measured using _____ similarity.	L1	CO5
4F-5	The Skip-Gram model tries to predict the _____ words given a target word.	L1	CO5
4F-6	One major advantage of the Skip-Gram model is its performance on learning good representations for _____ words.	L1	CO5
4F-7	The size of the window in the Skip-Gram model determines how many _____ words are used in training.	L3	CO5
4F-8	Unlike Skip-Gram, CBOW predicts the _____ word based on the surrounding context.	L2	CO5
4F-9	CBOW uses a _____ of context word embeddings to make a prediction.	L1	CO5
4F-10	In CBOW, the word vectors are learned by minimizing the _____ between predicted and actual center words.	L1	CO5
4F-11	Both CBOW and Skip-Gram are variants of the _____ architecture for learning word embeddings.	L1	CO5

4F-12	GloVe combines the benefits of count-based and _____ models.	L2	CO5
4F-13	Word embeddings are often evaluated using tasks such as _____ similarity and analogy tasks.	L2	CO5
4F-14	The cosine of the angle between two word vectors is called _____ similarity.	L1	CO5
4F-15	CBOW stands for _____	L1	CO5
Match the following			
4M-1.	a) BOW b) CBOW c) CRF d) HMM	i) Conditional Random Field ii) Hidden Markov Model iii) Bag Of Words iv) Continuous Bag Of Words	L1 CO5
4M-2	a) Skip-gram b) CBOW c) CRF d) HMM	i) Discriminative model ii) Generative Model iii) Generate word embedding iv) Word embedding techniques	L1 CO5
4M-3.	a) GloVe b) STS c) WSD d) SVD	i) Word Sense Disambiguation ii) Singular Value Decomposition iii) Global Vectors for Word Representation iv) Semantic Textual Similarity	L1 CO5
4M-4.	CBOW layers: a) Input layer b) Hidden layer c) Output layer d) NLP	i) $W \times N$ ii) Natural Language Processing iii) $1 \times N$ iv) $1 \times W$	L1 CO5
4M-5.	a) Speech Recognition b) NEM c) Sentiment analysis d) Part of speech tagging	i) Grammatical tagging ii) Extract subjective qualities iii) Identifies words iv) Speech-to-text	L1 CO5
5 Marks			

4D-1.	Explain about Vector Space Model of Semantics?	L2	CO5
4D-2.	What are the NLP Tools and approaches?	L1	CO5
4D-3.	Discuss about Semantic Vector Space Models in R?	L6	CO5
4D-4	Discuss Doc2vec model?	L6	CO5
4D-5.	What is the word2vec model? Explain two types of word2vec models?	L1	CO5
4D-6	Discuss the Architecture of the CBOW model?	L6	CO5
4D7.	Difference between Bag-of-Words model and the Continuous Bag-of- Words?	L2	CO5
4D-8	Explain the Skip-gram model?	L5	CO5
4D-9	What are the NLP use cases?	L1	CO5
4D-10	Explain skip-gram model with suitable example?	L5	CO5
4D-11	What are the Advantages and disadvantages of the skip-gram model?	L1	CO5
4D-12	Discuss about GloVe?	L6	CO5
4D-13	Explain about Evaluations and Applications in word similarity?	L5	CO5
4D-14	Explain about STS and WSD?	L5	CO5
4D-15	What are the evaluations and applications domains in word similarity?	L1	CO5
Unit-V-Analogy reasoning			
Multiple choice questions			
5C-1	Which of the following best describes the task of Named Entity Recognition? A. Identifying the sentiment in a sentence B. Recognizing grammatical errors in text C. Identifying and classifying entities such as names of people, places, organizations in a text D. Parsing syntactic trees from text	L5	CO6
5C-2	Which type of neural network is often used for sequence labeling tasks like NER? A. CNN B. Recursive Neural Network C. RNN/LSTM D. Autoencoder	L5	CO6
5C-3	Opinion mining is primarily used for: A. Topic modeling B. Syntax checking C. Sentiment analysis in text D. Language translation	L2	CO6

5C-4	Why are Recurrent Neural Networks suitable for opinion mining? A. They are fast and simple B. They can capture long-term dependencies in text C. They only require one input layer D. They perform well on non-sequential data	L5	CO6
5C-5	Parsing and Sentiment Analysis using Recursive Neural Networks Q6. Recursive Neural Networks (RecNNs) are particularly effective for: A. Analyzing time series data B. Parsing tree-structured data C. Performing image classification D. Machine translation	L5	CO6
5C-6	In a RecNN, what kind of structure is the input typically organized into? A. Grid B. Sequence C. Graph D. Tree	L5	CO6
5C-7	In analogy reasoning tasks, which of the following models is typically used to capture vector relationships like “man : king :: woman : ?” A. CBOW B. Word2Vec (Skip-Gram) C. LSTM D. CNN	L1	CO6
5C-8	In text CNNs, what do convolutional filters primarily capture? A. Entire document structure B. Local word patterns and features C. Tree dependencies D. Time-series data	L1	CO6
5C-9	Why are Convolutional Neural Networks used for sentence classification? A. They work well with audio signals B. They capture local n-gram features efficiently C. They require tree structures D. They model long-term dependencies in sequences	L5	CO6
5C-10	In a sequence-to-sequence model for dialogue generation, what is the role of the LSTM encoder? A. Generate the response B. Translate the output to a different language C. Convert the input sentence into a fixed-length context vector D. Classify the sentiment	L5	CO6
5C-10	What advantage do LSTMs have over vanilla RNNs in dialogue generation? A. They are easier to train B. They can process images C. They solve the vanishing gradient problem	L1	CO6

	D. They are non-sequential		
	Fill in the blanks		
5F-1	NER is a subtask of ____.	L1	CO6
5F-2	RNNs maintain a hidden state that is updated ____ as the sequence is processed.	L2	CO6
5F-3	NER stands _____	L2	CO6
5F-4	Recursive Neural Networks operate on data with a ____ structure.	L1	CO6
5F-5	CNNs apply ____ filters to extract local features from the text.	L1	CO6
5F-6	LSTMs improve upon RNNs by introducing ____ gates to control the flow of information.	L2	CO6
5F-7	Analogy: NER : Token Classification :: POS Tagging : _____	L2	CO6
5F-8	Analogy: Opinion Mining : Sentiment Detection :: RNN : _____	L4	CO6
5F-9	Analogy: Recursive Neural Networks : Tree Structures :: Recurrent Neural Networks : _____	L2	CO6
5F-10	Analogy: CNNs : Local Feature Extraction :: RNNs : _____	L5	CO6
5F-11	Analogy: LSTM : Long-Term Dependencies :: Vanilla RNN : _____	L2	CO6
5F-12	CRF stands for _____	L1	CO6
5F-13	NPS stands for _____	L1	CO6
5F-14	Parsing is like carefully looking at sentences to figure out how _____ and _____ are connected.	L1	CO6
5F-15	The parser is also known as _____	L2	CO6
Match the following			
5M-1	a) NER i) Natural Language Processing b) NLP ii) Conditional Random Field c) CRF iii) Long Short Term Memory d) LSTM iv) Named Entity Recognition		CO6

5M-2	a) Top down parser1 b) Top down parser1 c) Bottom up parser1 d) Bottom up parser1	i) Recursive descent ii) LL(1) iii) LR parser iv) Operator precedence	L1	CO6
5M-3	Sentiment analysis approaches: a) Rule-based b) ML c) NN d) Hybrid	i) Combines rule-based and ML ii) Lexicon methods iii) SVM iv) ANN	L1	CO6
5M-4	Types of sentiment analysis: a) Fine-grained b) Emotion detection c) Aspect-based d) Multilingual	i) features of a subject ii) rooted polarity iii) diverse languages iv) identify emotions	L1	CO6
5M-5	a) Data preparation b) Data preprocessing c) Word embeddings d) Sequence padding	i) Pad sequences ii) embedding layer iii) Labeled datasets iv) Text cleaning	L1	CO6

5- MARK QUESTIONS

5D-1	Explain about NER?	L2	CO6
5D-2	What is the purpose of NER?	L1	CO6
5D-3	How NER works?	L1	CO6
5D-4	Discuss various Methods of NER?	L6	CO6
5D-5	Explain various NER methodologies?	L5	CO6
5D-6	What are the NER benefits and challenges?	L1	CO6
5D-7	Explain Opinion Mining Using RNN with example?	L5	CO6
5D-8	Why perform Sentiment Analysis?	L1	CO6
5D-9	Discuss various Types of Sentiment Analysis?	L6	CO6
5D-10.	How does Sentiment Analysis work?	L1	CO6
5D-11.	Explain Parsing And Sentiment Analysis Using RNN?	L5	CO6
5D-12.	How parsing and sentiment analysis work together when integrated using RNN?	L1	CO6
5D-13.	Discuss about Sentence Classification Using CNN?	L6	CO6
5D-14.	How sentence is classified using CNN?	L1	CO6
5D-15.	How dialogue generation is done with LSTM?	L1	CO6

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	SRI INDU COLLEGE OF ENGG & TECH LESSON PLAN (Regulation :R22) Department of AIML			Prepared on: 2025 Page: 5 of 6
	Sub. Code & Title	R22CSM4111 – DEEP LEARNING		
	Academic Year: 2025-26	Year/Sem	IV/II	
	Faculty Name & Designation	Dr. B. KARUNAIAH Associate Professor		

ASSIGNMENT QUESTIONS (MID-I & MID-II)

ASSIGNMENT -1

Sl. No	Assignment Questions	Register Number	Course outcome	Level
1.	1. Describe forward propagation in ANN. 2. Explain about the vanishing gradient problem? 3. Explain about Dynamic Memory Models? 4. Differentiate RNN and LSTM network? 5. Explain about Image generation with Generative adversarial networks?	22D41A660 TO 22D41A6605	CO1 CO1 CO2 CO2 CO3	4 5 5 2 5
2.	1. Describe backward propagation in ANN . 2. Explain about Gradient descent ? 3. Explain about Convolutional neural network? 4. What are the differences between GRU and LSTM? 5. Explain about Automatic Image Captioning?	22D41A6606 TO 22D41A6612	CO1 CO1 CO2 CO2 CO3	4 5 5 1 5
3.	1. Discuss about ReLU Heuristics for avoiding bad local minima? 2. What are the differences between forward and backward propagation? 3. Explain about Auto encoders ? 4. Comparison Between Discriminative and Generative Models? 5. Write short notes on Object Detection?	22D41A6613 TO 22D41A6617	CO1 CO1 CO2 CO2 CO3	6 1 5 2 2
	1. Explain the following? a). Gradient descent (b). Unit saturation 2. Discuss about Unit saturation? 3. Explain about Encoder Decoder architectures? 4. Differentiate RNNs and feed forward networks? 5. Explain about Image Segmentation?	22D41A6618 TO 22D41A6622	CO1 CO1 CO2 CO2 CO3	5 6 5 2 5
	1. Write short notes on Heuristics for faster training ?		CO1	2

	2. Explain about Regularization? 3. Explain the working of LSTM? 4. Explain about Dynamic Memory Models? 5. Explain about Image generation with Generative adversarial networks?	22D41A6623 TO 22D41A6627	CO1 CO2 CO2 CO3	2 5 5 5
	1. Write short notes on Heuristics for faster training ? 2. Explain about Dropout ? 3. Explain about GRU? 4. What are Generative Adversarial Networks? 5. Discuss about Application of Automatic image captioning?	22D41A6628 TO 22D41A6632	CO1 CO1 CO2 CO2 CO3	2 5 5 1 6
	1. Describe forward propagation in ANN. 2. How does dropout solve the Over fitting problem? 3. Explain about Variational Auto-encoders? 4. What are the differences between GRU and LSTM? 5. Why Do We Need Automatic Image Captioning ?	22D41A6633 TO 22D41A6637	CO1 CO1 CO2 CO2 CO3	4 1 5 1 1
	1. Discuss about ReLU Heuristics for avoiding bad local minima? 2. Explain about activation functions? 3. How does Recurrent Neural Networks work? 4. What are Pooling layers? 5. Explain about Automatic Image Captioning?	22D41A6638 TO 22D41A6642	CO1 CO1 CO2 CO2 CO3	6 5 1 1 5
	1. Explain about Regularization? 2. What are the differences between forward and backward propagation? 3. What are Generative Adversarial Networks? 4. Explain about GRU? 5. Discuss the Advantages and Disadvantages of Object Detection?	22D41A6643 TO 22D41A6647	CO1 CO1 CO2 CO2 CO3	2 1 1 5 6
	1. What are the differences between forward and backward propagation? 2. Discuss about ReLU Heuristics for avoiding bad local minima? 3. What is a Recurrent Neural Network (RNN)? 4. Comparison Between Discriminative and Generative Models? 5. How Object Detection works?	22D41A6648 TO 22D41A6652	CO1 CO1 CO2 CO2 CO3	1 6 1 2 1

.	1. Write short notes on Heuristics for faster training ?	22D41A6653 TO 22D41A6657	CO1	2
	2. Discuss about ReLU Heuristics for avoiding bad local minima?		CO1	6
	3. Explain about Encoder Decoder architectures?		CO2	5
	4. Differentiate RNNs and feed forward networks?		CO2	2
	5. Write short notes on Object Detection?		CO3	2
.	1. Explain about the vanishing gradient problem?	22D41A6658 TO 22D41A6662	CO1	5
	2. Explain about Regularization?		CO1	2
	3. Explain about Auto encoders ?		CO2	5
	4. What are the differences between GRU and LSTM?		CO2	1
	5. Explain about Image Segmentation?		CO3	5
	1. Discuss about ReLU Heuristics for avoiding bad local minima?	22D41A6663 TO 23D45A6603	CO1	6
	2. What are the differences between forward and backward propagation?		CO1	1
	3. Explain about Convolutional neural network?		CO2	5
	4. Explain the working of LSTM?		CO2	5
	5. What are the Image Segmentation Techniques?		CO3	1
	1. Explain the following?	23D45A6604 TO 23D45A6606	CO1	5
	a). Regularization (b). Dropout		CO1	1
	2. How does dropout solve the Over fitting problem?		CO2	1
	3. What are the differences between GRU and LSTM?		CO2	1
	4. What are Generative Adversarial Networks?		CO3	5
	5. Explain about Automatic Image Captioning?			

ASSIGNMENT -2

No	Assignment Questions	Register Number	Course outcome	Level
	1.Explain working principle of video-to-text conversion with LSTM models?	22D41A6601 TO 22D41A6605	CO4	5
	2. Explain about Vector Space Model of Semantics?		CO5	2
	3. What are the NLP Tools and approaches?		CO5	1
	4. Discuss various Types of Sentiment Analysis?		CO6	6
			CO6	1

	5. How dialogue generation is done with LSTM?			
	1. How to convert Video to text with LSTM models? 2. Discuss about Semantic Vector Space Models in R? 3. Discuss Doc2vec model? 4. Discuss about Sentence Classification Using CNN? 5. How dialogue generation is done with LSTM?	22D41A6606 TO 22D41A6612	CO4 CO5 CO5 CO6 CO6	1 6 6 6 1
	1. What are the Applications of video-to-text conversion with LSTM models? 2. What is the word2vec model? Explain two types of word2vec models? 3. Difference between Bag-of-Words model and the Continuous Bag-of- Words? 4. Explain Parsing And Sentiment Analysis Using RNN? 5. How parsing and sentiment analysis work together when integrated using RNN?	22D41A6613 TO 22D41A6617	CO4 CO5 CO5 CO6 CO6	1 2 4 5 1
	1. Explain about Attention models for computer vision tasks? 2. Discuss the Architecture of the CBOW model? 3. Explain the Skip-gram model? 4. Discuss various Types of Sentiment Analysis? 5. How does Sentiment Analysis work?	22D41A6618 TO 22D41A6622	CO4 CO5 CO5 CO6 CO6	5 6 5 6 1
	1. What is the Purpose of Attention for computer vision tasks? 2. What are the NLP use cases? 3. Explain skip-gram model with suitable example? 4. What are the NER benefits and challenges? 5. Explain Opinion Mining Using RNN with example?	22D41A6623 TO 22D41A6627	CO4 CO5 CO5 CO6 CO6	1 1 5 1 5
	1. What are the Types of attention models? 2. What are the Advantages and disadvantages of the skip-gram model? 3. Discuss about GloVe? 4. How NER works? 5. Explain various NER methodologies?	22D41A6628 TO 22D41A6632	CO4 CO5 CO5 CO6 CO6	1 1 6 1 5
	1. Explain working principle of video-to-text conversion with LSTM models? 2. Explain about Evaluations and Applications in word similarity? 3. Explain about STS and WSD? 4. How dialogue generation is done with LSTM? 5. What is the purpose of NER?	22D41A6633 TO 22D41A6637	CO4 CO5 CO5 CO6 CO6	5 5 5 1 1
	1. How to convert Video to text with LSTM models? 2. What are the evaluations and applications domains in word similarity? 3. Explain about Vector Space Model of Semantics? 4. Discuss about Sentence Classification Using CNN? 5. How sentence is classified using CNN?	22D41A6638 TO 22D41A6642	CO4 CO5 CO5 CO6 CO6	1 1 2 6 1
	1. What are the Applications of video-to-text conversion with LSTM models? 2. Discuss the Architecture of the CBOW model? 3. Difference between Bag-of-Words model and the Continuous Bag-	22D41A6643 TO 22D41A6647	CO4 CO5	1 6

	of- Words? 4. Explain Parsing And Sentiment Analysis Using RNN? 5. How parsing and sentiment analysis work together when integrated using RNN?		CO5 CO6 CO6	2 5 1
	1. Explain about Attention models for computer vision tasks? 2. Explain the Skip-gram model? 3. What are the NLP use cases? 4. Discuss various Types of Sentiment Analysis? 5. How does Sentiment Analysis work?	22D41A6648 TO 22D41A6652	CO4 CO5 CO5 CO6 CO6	5 5 1 6 1
	1. What is the Purpose of Attention for computer vision tasks? 2. Explain skip-gram model with suitable example? 3. What are the Advantages and disadvantages of the skip-gram model? 4. Explain Opinion Mining Using RNN with example? 5. Why perform Sentiment Analysis?	22D41A6653 TO 22D41A6657	CO4 CO5 CO5 CO6 CO6	1 5 1 5 1
	1. What are the Types of attention models? 2. Discuss about GloVe? 3. Explain about Evaluations and Applications in word similarity? 4. Discuss various Methods of NER? 5. What are the NER benefits and challenges?	22D41A6658 TO 22D41A6662	CO4 CO5 CO5 CO6 CO6	1 6 5 6 1
	1. How to convert Video to text with LSTM models? 2. Explain about STS and WSD? 3. Difference between Bag-of-Words model and the Continuous Bag-of- Words? 4. What is the purpose of NER? 5. How NER works?	22D41A6663 TO 23D45A6603	CO4 CO5 CO5 CO6 CO6	1 5 2 1 1
	1. What are the Types of attention models? 2. Difference between Bag-of-Words model and the Continuous Bag-of- Words? 3. What are the Advantages and disadvantages of the skip-gram model? 4. Explain various NER methodologies? 5. How does Sentiment Analysis work?	23D45A6604 TO 23D45A6606	CO4 CO5 CO5 CO6 CO6	1 2 1 5 1

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