Assignment 1

7/10/2024

15 Points Possible

Attempt 1

7/10/2024

NEXT UP: Review Feedback

Attempt 1 Score: N/A

Add Comment

3 Attempts Allowed

6/24/2024 to 7/10/2024

Details

Part A: Literature Exploration and Comparison (8 marks)

Team Contribution:

Member1 : 100%/No Contribution

Member2 : 100%/No Contribution

Member3 : 100%/No Contribution

Member4 : 100%/No Contribution

Objective: Explore a specific application within a specific domain, identify three significant papers, and conduct a comparative analysis.

Steps

1. **Choose an Application Area:** Choose any one application area from the list given below. You can choose your own domain also.

List of potential application area:

- CO2 Emission Prediction
- Cyclone prediction
- Traffic Flow Prediction
- Automatic music generation
- Self-Organizing Maps
- Energy Consumption Prediction
- Building Energy Optimization
- Waste Composition Analysis
- Predictive Air Quality Models
- Application for cancer detection

- Gender recognition using voice
- Content Recommendation with Transformers
- Medical Image Diagnosis
- Speech Recognition
- Speech Translation
- Emotion Recognition in Social Media
- Autonomous Navigation for Robots
- Gesture Recognition for Human-Computer Interaction
- Wildlife Classification
- Real-time Language Translation
- Human Activity Recognition from videos
- Expression Recognition from images

2. **Identify Three Papers:** Identify three significant journals which uses Deep Feedforward Neural Network / CNN / RNN / Transformer networks (any one has to be chosen). You can use transfer learning for CNN also. Journal should be from reputed sources like IEEE/ Springer or ACM that focus on the application of CNN/RNN/Transformer networks in your chosen domain. **Upload all three PDF**s as individual files on Canvas.
3. Compare the architecture and methodologies used in the journals.

- **Create a Comparison Table:** Compare the three papers and present your findings in a table with the following titles:
  - Group Number, member names, and BITS IDs
  - Domain
  - PAPER 1, PAPER 2, PAPER 3 (with subheadings: Title, Authors, Year, Architecture of Deep Learning (including the number of layers, types of layers, activation functions, and any unique features). Network application (e.g., feature engineering, classification, regression), Training procedures (e. g, training strategy, including optimization algorithms, learning rates, batch sizes, and regularization techniques) Evaluation/Performance metric, Dataset used, URL if public dataset) [*Reference Comparison Table is given below]
- **Conclude:** End the comparison with a proper conclusion highlighting your observations. Justify the choice of one paper over the others for implementation in Part B.
- **Submission:** Upload the table and comparison as one PDF (Filename: DomainName_GroupNumber).

Expected Comparison Table (5 marks)

	PAPER 1	PAPER 2	PAPER 3
Group Number, member names and BITS ID			
Domain			

Title of the paper

Authors

Year of publication

Architecture of Deep Learning (including the number of layers, types of layers, activation functions, and any unique features)

How is the network helping the overall task? eg: feature engg or classification or regression or all

Training procedures (e.g, training strategy, including optimization algorithms, learning rates,

batch sizes, and regularization techniques)

Evaluation / Performance metric used

Name of Dataset used. If a public dataset, provide the URL.

Conclusion: You must end the comparison with a proper **conclusion** highlighting your observations.

Part B: Industry DL Product (7 marks)

Team Contribution:

Member1 : 100%/No Contribution

Member2 : 100%/No Contribution

Member3 : 100%/No Contribution

Member4 : 100%/No Contribution

Objective: Identify and understand any industry product and summarize the understanding

Instructions:

- **Identify DL Product:** Identify any product that is used in any industry. Egs of products --

Product Recommendation in Amazon, Music recommendation in Spotify, ChatGPT, Dall-E, Face tagging in Facebook, Bard ... Ensure that it is a product used int he industry. You can choose your own.

- **Identify the white paper associated with the above product, if any:** Upload the white as PDF in the Canvas.
- **Summarize:** In your own words, summarize the product.
  - Paragraph 1: What is the objective of the product.
  - Paragraph 2: What is the solution technology used. How is the solution achieving he objective mentioned earlier.
  - Paragraph 3: What are the frameworks, algorithms, tools etc used for the developing the solution.
  - Paragraph 4: What are the issues in the current solution.
  - Paragraph: Do you see any future scope in similar products.
- **Submission:** Write the above within 500 words and upload as PDF in Canvas. (Filename: DomainName_GroupNumber).
- **Plagiarism:** Any plagiarism will result in zero marks.
- **Late Submissions:** Late submissions incur a penalty of (-2) marks.

Additional Instructions:

- Journals can be chosen without any restrictions on impact factors or other indices.
- Select three research papers within a single domain, each employing a different algorithm (CNN, RNN, Transformers) for comparative analysis.
- Any ONE algorithm has to be used.
- Dataset can be same or different.
- For any queries, use the discussion forum.

View Rubric

Assignment-1 Rubric

Criteria	Ratings	Pts
Are all journals in same domain?		/ 0.5 pts
Journal 1, 2, 3 uploaded?		/ 0.5 pts
Journal 1 details		/ 1 pts
Journal 2 details		/ 1 pts
Journal 3 details		/ 1 pts

Assignment-1 Rubric

Criteria	Ratings	Pts
Dataset details and Dataset URL		/ 1 pts
Architecture of Deep Learning (including the number of layers, types of layers, activation functions, and any unique features)		/ 1 pts
How is the network helping the overall task? eg: feature engg or classification or regression or all		/ 1 pts
Training procedures (e.g, training strategy, including optimization algorithms, learning rates, batch sizes, and regularization techniques)		/ 1 pts
Conclusion highlighting the observations.		/ 1 pts
DL Product, its White paper + paper uploaded?		/ 1 pts
Objective of the product		/ 1 pts

Assignment-1 Rubric

Criteria	Ratings	Pts
Solution technology used. How is the solution achieving the objective mentioned earlier.		/ 1 pts
Frameworks, algorithms, tools etc used for the developing the solution.		/ 1 pts
Issues in the current solution		/ 1 pts
Future scope in similar products		/ 1 pts
late submission		/ 0 pts
		Total Points: 0

	File Name	Size	
	Product_R...art_B.pdf	72.7 KB	
	CO2_Emiss...art_A.pdf	166 KB	
	paper-2-C...le AI.pdf	1.22 MB	
	paper-3-I...tings.pdf	2.78 MB	
	paper-1-M...India.pdf	2.9 MB	
	amazon-re...ystem.pdf	3.75 MB