GRADUATE CERTIFICATE INTELLIGENT SENSING SYSTEMS PRACTICE MODULE REPORT TEMPLATE

First1 Last1, First2 Last2

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ABSTRACT

The abstract should consist of 1 paragraph describing the motivation for your report and a high-level explanation of the methodology you used and results obtained. Note: this project report template is modified from Stanford University CS230 report template https://cs230.stanford.edu/

***Index Terms*—** One, two, three, four,

1. INTRODUCTION

Explain the problem and why it is important. Discuss your motivation for pursuing this problem. Give some background if necessary. Clearly state what the input and output is. Be very explicit: The input to our algorithm is an image, video, RGB-D, audio. We then use a neural network, etc. to output a predicted age, facial expression, action music genre, etc..

This is very important since different teams have different inputs/outputs spanning different application domains. Being explicit about this makes it easier for readers.

2. LITERATURE REVIEW

You should find existing references (e.g., papers, survey, industrial products), group them into categories based on their approaches, and discuss their strengths and weaknesses, as well as how they are similar to and differ from your work. In your opinion, which approaches were clever/good? What is the state-of-the-art?

3. DATASET

Describe your dataset: how many training/validation/test examples do you have? Is there any pre-processing you did? What about normalization or data augmentation? What is the resolution of your images? Include a citation on where you obtained your dataset from. Try to include examples of your data in the report (e.g. include an image, show a waveform, etc.).

4. PROPOSED SYSTEM

Describe your proposed system. You might want to use a system architecture or flow chart to illustrate your proposed system. For each module, give a detailed description of how it works. Even you use pre-trained model in some modules, provide a description.

5. EXPERIMENTAL RESULTS

You should also give details about what (hyper)parameters you chose and how you chose them. What your primary metrics are: accuracy, precision, etc. Provide equations for the metrics if necessary. You also need to evaluate your approach in various experimental setups. For results, you want to have a mixture of tables and plots. To reiterate, you must have both quantitative and qualitative results! Include visualizations of results, examples of where your approach failed and a discussion of why certain approach failed or succeeded.

Some Latex examples are provided as follows. An inline equation is $a + b = c$. An example of one-column figure is provided in Figure 1.

$$B_{r,c} = \sum\{f(i,j)|(i,j) \in \Omega_{r,c}\}. \quad (1)$$

$$\sum_x = a + b + \hat{c}, \quad (2)$$

(a) (b) (c)

Fig. 1. Test figure (single column).

Table 1. The performance comparison.

Approach	Ref. [1]	Ref. [2]	Proposed approach
Metric A	0.8181	0.9171	0.9616
Metric B	0.8236	0.7654	0.8615

6. CONCLUSIONS AND FUTURE WORK

Summarize your report and reiterate key points. Why do you think that some algorithms worked better than others? For future work, if you had more time, more team members, or more computational resources, what would you explore?

7. CONTRIBUTIONS

This section should describe contributions of each team member to the project.

8. REFERENCES

[1] K. He, X. Zhang, S. Ren, and J. Sun, "Deep residual learning for image recognition," in *IEEE Conf. on Computer Vision and Pattern Recognition*, Las Vegas, NV, USA, Jun. 2016, pp. 770–778.

[2] H. Nguyen, L. Kieu, T. Wen, and C. Cai, "Deep learning methods in transportation domain: a review," *IET Intelligent Transport Systems*, vol. 12, no. 9, pp. 998–1004, 2018.