

L^AT_EX Author Guidelines for CVPR Proceedings

Anonymous CVPR submission

Paper ID *****

Abstract

In this project, we aim to create and test different convolutional and recurrent network combinations to optimize the classification accuracy of EEG data across both a single subject and all subjects. We also aim to evaluate the classification accuracy of these models as a function of time. The data is composed from 9 test subjects, has 22 channels taken at 1000 time steps, and has 4 task labels.

1. Introduction

We chose five models to test optimizing the classification accuracy. There are two RNN architectures, one CNN architecture, and two combination CNN-RNN architectures.

1.1. Data Augmentation

We explored several data augmentation techniques in hopes of increasing model performance. **ADD** We consistently found that data augmentation made the model perform worse, which was consistent with the brain decode paper[2].

1.2. RNN Architectures

We implemented two Recurrent Neural Network (RNN) architectures: the Long Short-Term Memory (LSTM) and Gated Recurrent Unit (GRU).

1.3. CNN Architectures

1.4. CNN-RNN Architectures

2. Results

2.1. Single Subject Accuracy

We trained the CNN-LSTM model on Subject 1. The model performed worse when tested on all other subjects as the model was overfit to the data from Subject 1. **DATA POINTS**

Method	Frobnability
Theirs	Frumpy
Yours	Frobbly
Ours	Makes one's heart Frob

Table 1. Results. Ours is better.

2.2. Accuracy Across All Subjects

We found that both RNN models had extremely low classification accuracy across all subjects, with less than 30 % accuracy for both architectures.

The CNN architecture performed significantly better, peaking around 74% accuracy.

3. Discussion

4. References

4.1. References

List and number all bibliographical references in 9-point Times, single-spaced, at the end of your paper. When referenced in the text, enclose the citation number in square brackets, for example [4]. Where appropriate, include page numbers and the name(s) of editors of referenced books. When you cite multiple papers at once, please make sure that you cite them in numerical order like this [1–5]. If you use the template as advised, this will be taken care of automatically.

References

- [1] FirstName Alpher. Frobnication. *IEEE TPAMI*, 12(1):234–778, 2002. **1**
- [2] FirstName Alpher and FirstName Fotheringham-Smythe. Frobnication revisited. *Journal of Foo*, 13(1):234–778, 2003. **1**
- [3] FirstName Alpher and FirstName Gamow. Can a computer frobnicate? In *CVPR*, pages 234–778, 2005. **1**
- [4] FirstName LastName. The frobnicable foo filter, 2014. Face and Gesture submission ID 324. Supplied as supplemental material fg324.pdf. **1**

108 [5] FirstName LastName. Frobnication tutorial, 2014. Supplied
109 as supplemental material `tr.pdf`. [1](#)
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