

# The Second




**Deadline: 6 March 2022 (11:59pm)**

# Task is to write a critical review

- ❑ Reading research papers is crucial for ML & Deep Learning fields.
- ❑ In the next slides, you can see 3 famous papers, and you need to choose **one** of them. Please read this paper carefully, then write a critical review.
- ❑ The critical review needs to be **2 pages (maximum)**.
- ❑ Your critical review should have the following sections:
  - ❑ Introduction: usually one paragraph, present the aim of the paper, and conclude the introduction with a brief statement of your evaluation (positive or negative).
  - ❑ Summary: Present a summary of the key points along with a limited number of examples.
  - ❑ Critique: A balanced discussion and evaluation of the **strengths**, **weakness** and **notable features** of the paper. Please share your own opinions. **[very important]**
  - ❑ Conclusion: Restate your overall opinion, provide recommendations.
  - ❑ References: If you have used other sources in you review you should also include a list of references at the end of the review.

<https://www.student.unsw.edu.au/structure-critical-review>

# Option 1 - Image Caption Generator (CNN & LSTM)

 This CVPR2015 paper is the Open Access version, provided by the Computer Vision Foundation. The authoritative version of this paper is available in IEEE Xplore.

## Show and Tell: A Neural Image Caption Generator

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### Abstract

*Automatically describing the content of an image is a fundamental problem in artificial intelligence that connects computer vision and natural language processing. In this paper, we present a generative model based on a deep recurrent architecture that combines recent advances in computer vision and machine translation and that can be used to generate natural sentences describing an image. The model is trained to maximize the likelihood of the target description sentence given the training image. Experiments on several datasets show the accuracy of the model and the fluency of the language it learns solely from image descriptions. Our model is often quite accurate, which we verify both qualitatively and quantitatively. For instance, while the current state-of-the-art BLEU-1 score (the higher the better) on the Pascal dataset is 25, our approach yields 59,*

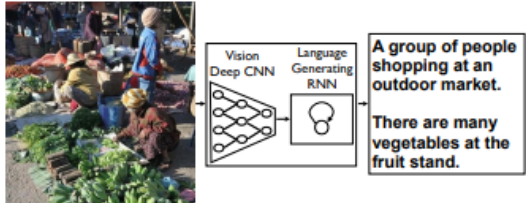


Figure 1. NIC, our model, is based end-to-end on a neural network consisting of a vision CNN followed by a language generating RNN. It generates complete sentences in natural language from an input image, as shown on the example above.

existing solutions of the above sub-problems, in order to go from an image to its description [6, 16]. In contrast, we would like to present in this work a single joint model that

# Option 2 – Classification with CNNs

## ImageNet Classification with Deep Convolutional Neural Networks Krizhevsky, Sutskever and Hinton, 2012.

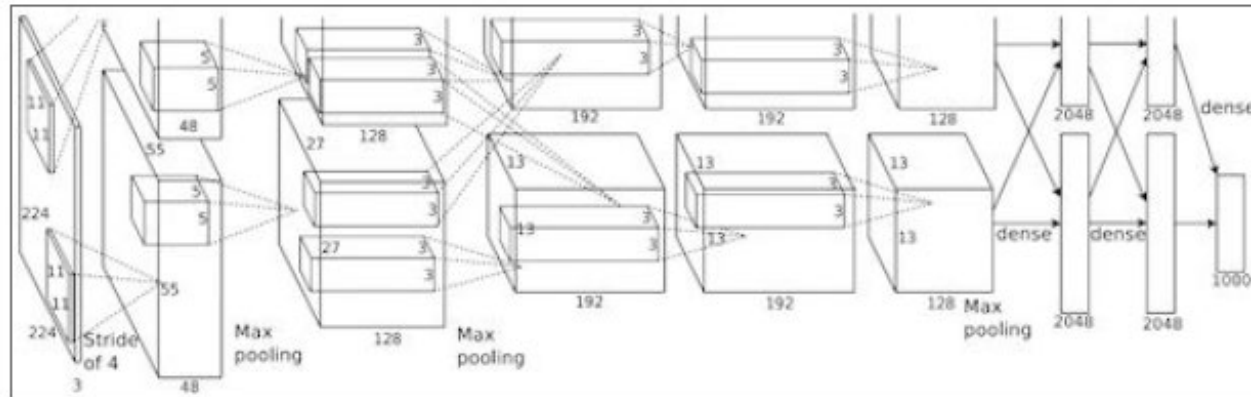


Figure copyright Alex Krizhevsky, Ilya Sutskever, and Geoffrey Hinton, 2012. Reproduced with permission.

“AlexNet”

### IMPORTANT NOTE!

This paper has been discussed in the lecture. If you pick this paper, you **MUST** provide more information. The content in lecture slides is **NOT** enough.

<https://proceedings.neurips.cc/paper/2012/file/c399862d3b9d6b76c8436e924a68c45b-Paper.pdf>

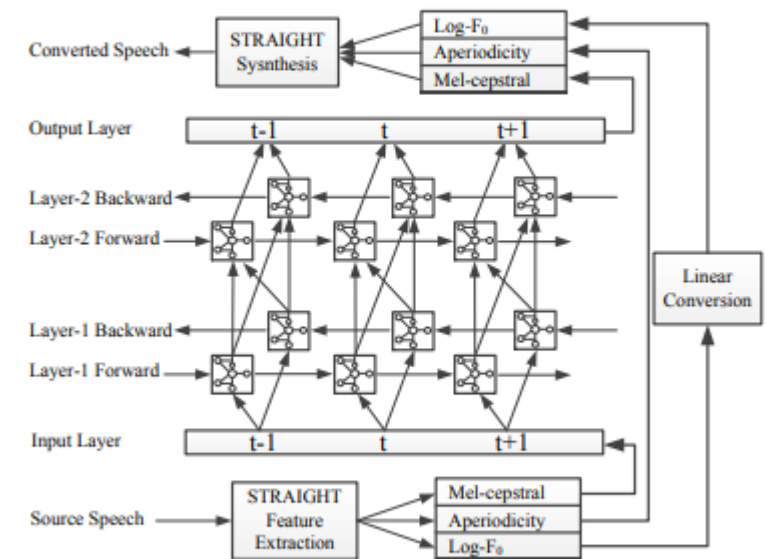
# Option 3 – Voice Conversion (LSTM-based)

Voice conversion using deep  
bidirectional long short-term  
memory based recurrent neural  
networks

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.699.5280&rep=rep1&type=pdf>

## 4. PROPOSED: DBLSTM-RNN BASED APPROACH

### 4.1. Basic Framework



**Fig. 4.** The DBLSTM-RNN based voice conversion architecture.

# Conclusion

- Please note that these are the very important CNN and LSTM papers published in the past years.
- My suggestion for those who are interested, is to read all these papers and understand the basic idea behind them. However, please only submit review for **one of them**.
- Please submit a PDF document with your name and student ID.

**The instructor will use plagiarism software and all submissions must be submitted individually. Plagiarism will not be tolerated.**