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Date:

# Research Paragraph

About your research

## Instructions

1. Answer the following questions as notes
2. Use the notes to write one paragraph (5-10 sentences) about your laboratory and your research \*feel free to use your notes from the **Explaining your Research** document

## Paragraph Brainstorming Notes

Question		Notes
What is your research topic?		<ul style="list-style-type: none"> <li>● Channel coding with deep learning</li> </ul>
Why is this topic important?		<ul style="list-style-type: none"> <li>● By optimizing parameters through deep learning method, adjust tradeoff of complexity and performance.</li> </ul>
Describe your experimentation:	Key Problem(s) / Research Question(s)	<ul style="list-style-type: none"> <li>● What deep learning techniques(method) were used?</li> <li>● How much has the performance improved?</li> <li>● How much has the complexity changed?</li> <li>● How many(times) trains have changed?</li> <li>● What's the difference(improvement) from the previous study?</li> </ul>
	Experimental Process: What experiments or tests do you perform to learn about or solve this problem?	<ul style="list-style-type: none"> <li>● Deep learning (used in computer science : SC is major part of deep learning, but communication system just use deep learning as Tools)should be adjusted to become an appropriate deep learning model in the field of communication.</li> <li>● Existing communication-related domain knowledge is required.</li> <li>● Set which parameters to train.</li> </ul>
How will this research be beneficial to the field of study? or How can it be applied outside of research? (i.e. commercial use or useful for everyday people)		<ul style="list-style-type: none"> <li>● In order to be applied to hardware (semiconductor), complexity must be low. So, improvement of complexity makes the method suitable for hardware.</li> </ul>

## Research Paragraph

*In the space below write **one paragraph** about the research you are doing. Please be sure to follow appropriate paragraph formatting.*

Since 2018, deep learning has been used in the communication field(my research field). In communication system's deep learning method, rather than a method only for communication system, the method of research in computer science(CS : a field of active research on methodology[technique]), which is conducting prior research, is being transformed to suit the communication field. The communication system's challenge to solve with my approach is to improve tradeoff for complexity and performance. Complexity and performance have Proportional relationship. Then, performance increases as complexity increases. The goal is to reduce complexity while performance is similar to before by training and optimizing parameters through deep learning methods or previous method. I am interested in the LSTM technique among the methods, and I am interested in the method because it is a suitable method for long code messages.