

Advanced Algorithms and Parallel Programming

Spring 2018

Advanced Algorithms Project

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- Python
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Current Section

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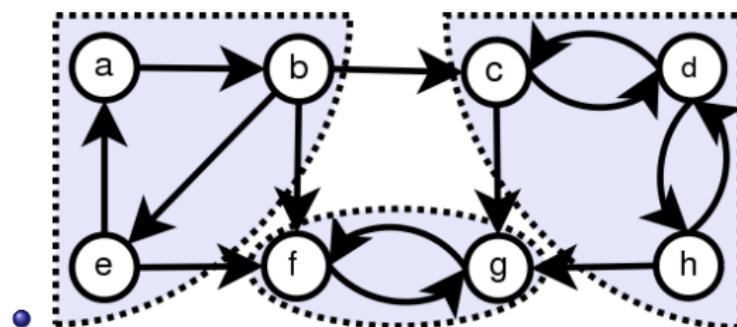


Figure: Graph with strongly connected components

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 - ③ Debug mode for testing a singular graph with algorithms provided(C++).
 - ④ Visualization of the experiments, can only be done with cvs files (Python).

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Python Part

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 - ② analysis.py
- They can be used outside of application

Python Part

```
yigitogumus@Yigits-MacBook-Pro|~/dev/AAPP_Project on master!?
± python src/python/analysis.py -h
usage: analysis.py [-h] [--index I] C

Visualize the experiment results

positional arguments:
  C          The Target Location of the experiment csv file

optional arguments:
  -h, --help  show this help message and exit
  --index I  Optional file selection variable
```

Figure: Analysis script help command result

Python Part

```
yigitoguzmus@Yigits-MacBook-Pro:~/dev/AAPP_Project$ python src/python/generate_graph_directories.py -h
usage: generate_graph_directories.py [-h] [--single S [S ...]] [--node N] G F

Generate directed graphs with different edge creation probabilities.

positional arguments:
  G                  Number of graphs for each edge creation interval
  F                  The Target Location of the Graph files

optional arguments:
  -h, --help          show this help message and exit
  --single S [S ...]  Single node class Graph creation for fast testing
                      between 5_50, 50_100 , 100_500 , 500_1000
  --node N           Specific Node selection for Graph Creation. This option
                      takes precedence over the Single node class selection.
```

Figure: generate graph directories script help command result

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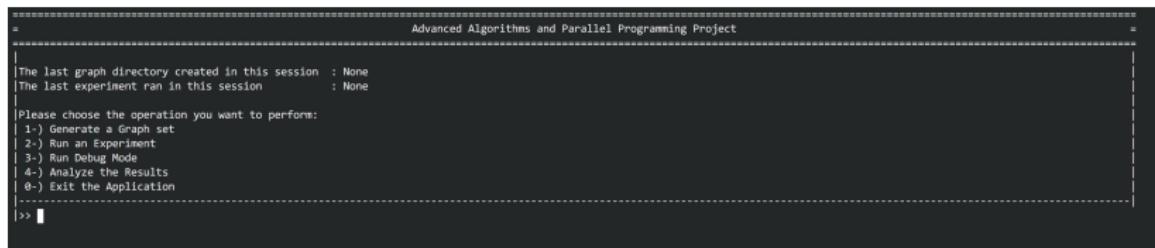
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The screenshot shows a terminal-like window titled "Advanced Algorithms and Parallel Programming Project". The window displays the following text:

```
=-----=  
| The last graph directory created in this session : None  
| The last experiment ran in this session      : None  
|  
| Please choose the operation you want to perform:  
| 1-) Generate a Graph set  
| 2-) Run an Experiment  
| 3-) Run Debug Mode  
| 4-) Analyze the Results  
| 0-) Exit the Application  
|=-----=  
|>> |
```

Figure: The main screen of the Application

Current Section

1 Introduction of the Problem

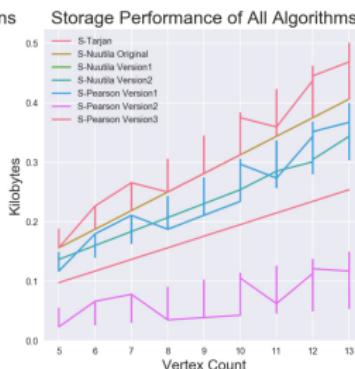
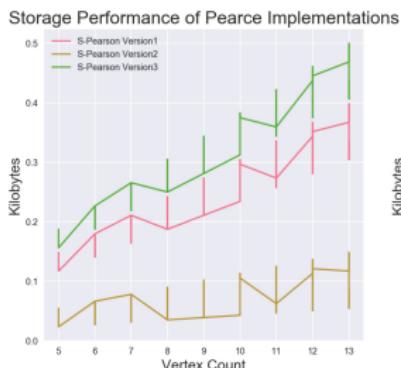
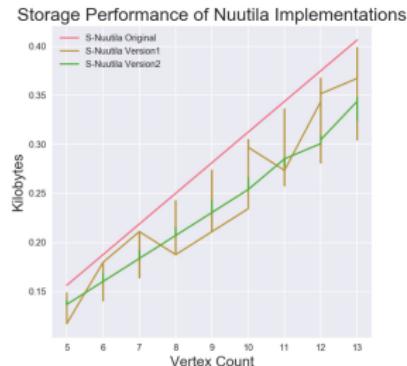
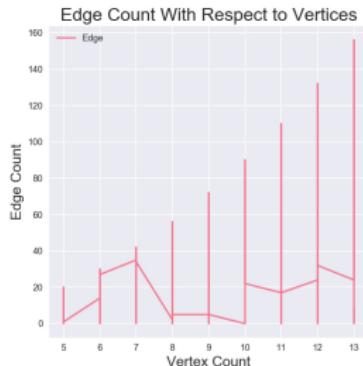
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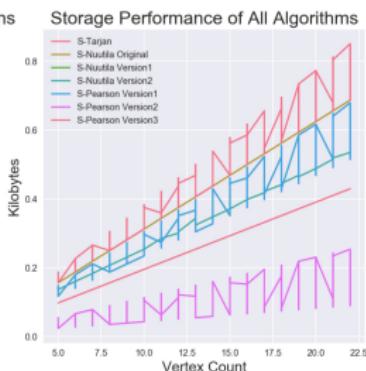
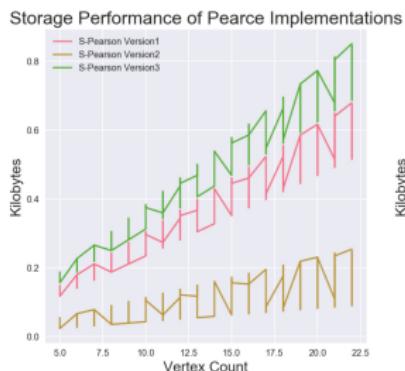
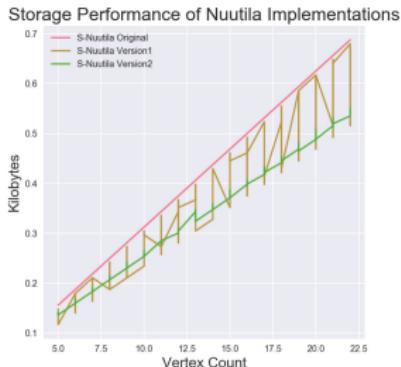
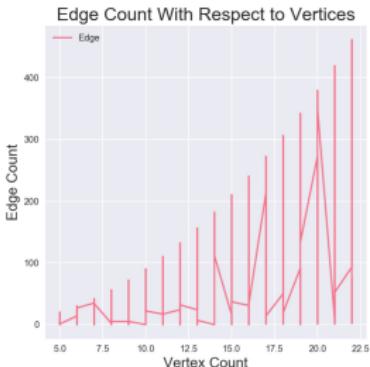
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- Results with respect to Storage Usage

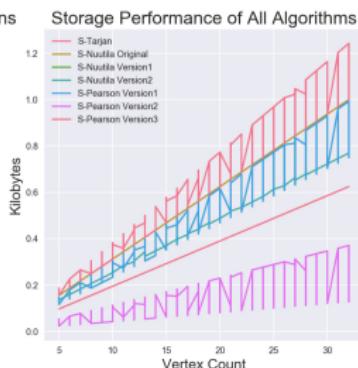
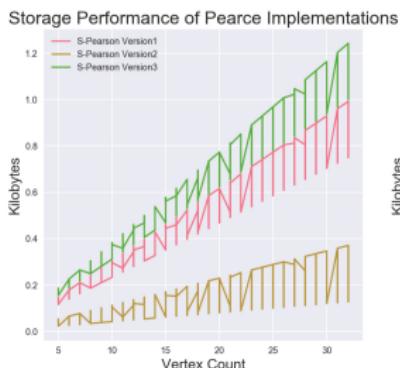
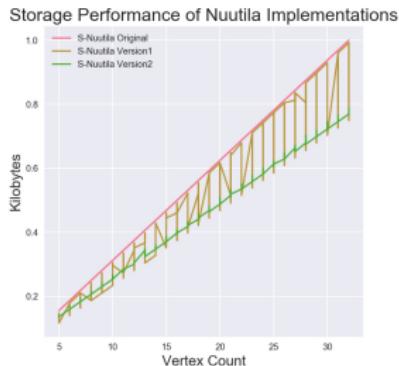
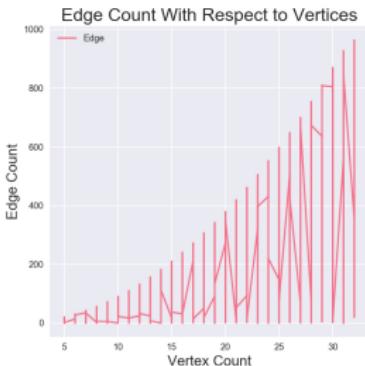
Analysis result of the first 5000 Graphs



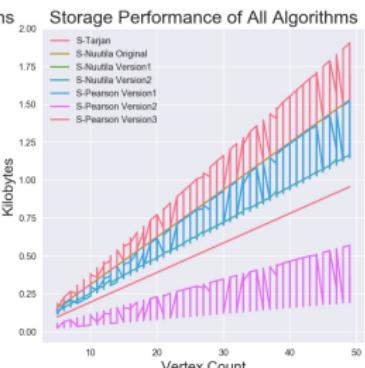
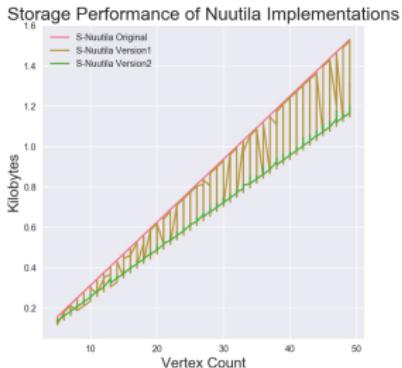
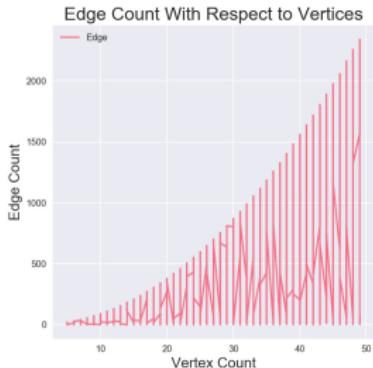
Analysis result of the first 10000 Graphs



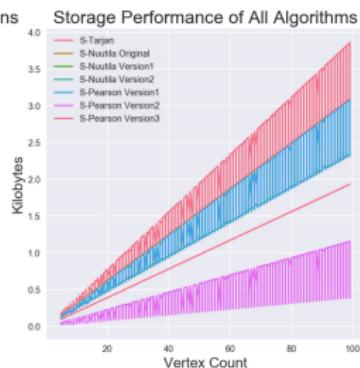
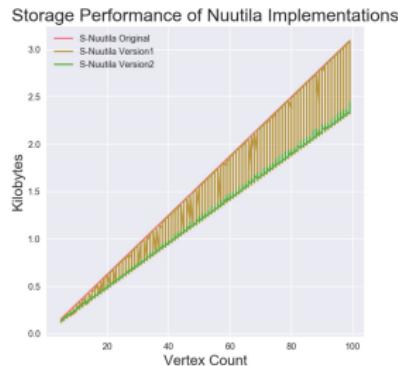
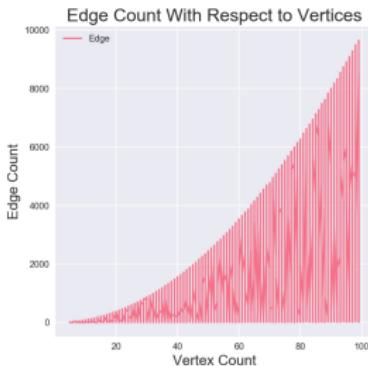
Analysis result of the first 15000 Graphs



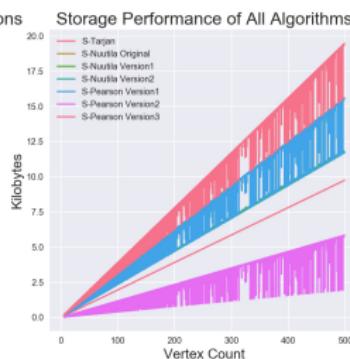
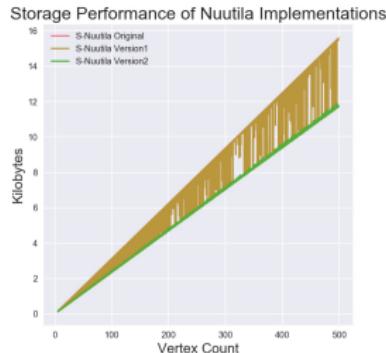
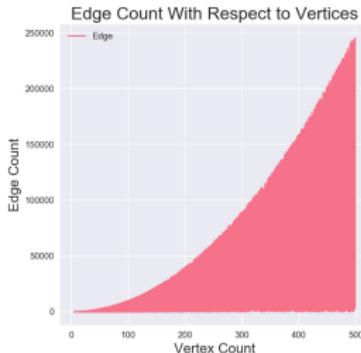
Analysis result of the first 25000 Graphs



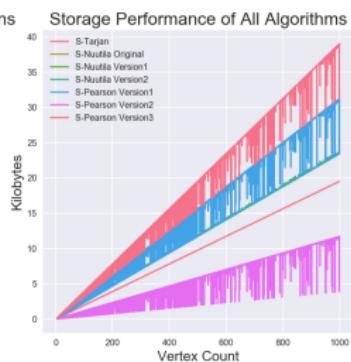
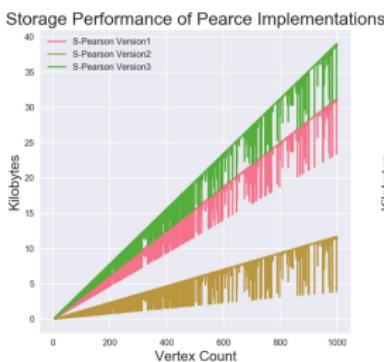
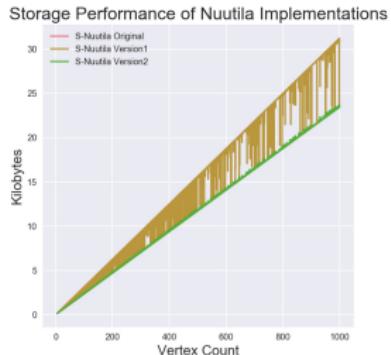
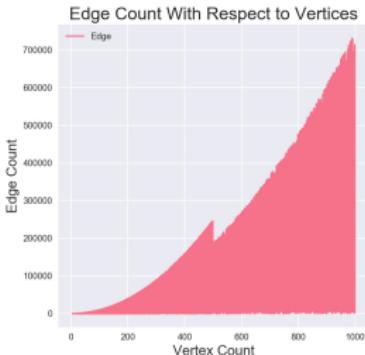
Analysis result of the first 50000 Graphs



Analysis result of the first 75000 Graphs



Analysis result of all of the Graphs



Analysis Results

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- For Pearce algorithms, Version 2 Uses the least amount of storage.
- Among all the algorithms, Pearce Version 2 uses the least amount of storage .

Demo ?

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Project itself and all the additional materials including this presentation can be downloaded from

https://github.com/yigitozgumus/AAPP_Project