APS Project Report

Title of project

All Pairs Shortest Path for Planar graph and its variations.

Team members

- Prakash Nath Jha (Roll: 2018201013)
- Suraj Garg (Roll: 2018202003)

Deliverables

- Implementation of All Pairs Shortest Path algorithm exploiting the property of planar graph.
- Implementation of **Floyd Warshall Algorithm**.
- Project Report describing the implementation and time and space complexity comparison of Floyd-Warshall algorithm with our implementation.

Project delivery plan

- 24th Oct: Preliminary discussions with TA regarding scope of the project.
- 25th Oct: Report submission regarding the initial analysis.
- 27-31st Oct: Discussion on algorithm to be implemented.
- 1-3rd Nov: Initial implemtation of the finalized algorithm.
- 4-5th Nov: Initial implementation evaluation and discussion on enhancements (if required).
- 10th Nov: Final implementation and project report submission.

Technologies to be used:

- Python

Online resources

- https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6877270
- https://jair.org/index.php/jair/article/view/10753/25682
- https://aaai.org/ocs/index.php/ICAPS/ICAPS11/paper/view/2700
- https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-046j-introduction-to-algorithms-sma-5503-fall-2005/video-lectures/lecture-19-shortest-paths-iii-all-pairs-shortest-paths-matrix-multiplication-floyd-warshall-johnson/

Repository where work is being committed

- https://github.com/pnjha/APS_Project

Plan for testing

To be discussed.

End user documentation

The documentation will contain implementation details of standard all pair shortest path algorithm which in this case is Floyd Warshall and our implemetation of an algorithm which exploits the property of planar graph.
The report will include comparision between the standard algorithm and our implementation based on time and space complexities and the performance of both algorithms in different test cases.