Project Description:

Course Project for SYSC5801 Winter 2016:

There are two options for the course project: (i) literature survey and research proposal, or (ii) an actual experimental project. For the research proposal, you need to explore a technical area related to the course including a comprehensive survey, thorough presentation/discussions/comparisons of the results, and suggestion of a research direction or project that extends the reviewed articles. For the experimental project, you may want to work with a partner of your choice, suggest a research project and actually do (parts of) the suggested research.

One main objective of the project is to **explore previously unknown facts/insights**. A 1- or 2-page proposal needs to be submitted. The proposal should describe the selected topic and the relevance of the topic to the course, provide the outline of the final report (could have minor modifications later), and list references to be used in the research. For a team-effort, only one proposal is necessary.

The final report is limited to 15 to 20 pages. The following points need to be considered for your project and report:

- Use publicly available references, preferably academic journals and conference proceedings, the majority of which were published within the last 2-3 years. References to web pages that are not published in academic journals or conference proceedings should be limited as they may not have been reviewed.

- Projects should not overlap course content: check the course website for class notes and list of topics for reference.

- Reports and suggested research should focus on technical aspects instead of marketing or business issues.

The format of the report:

- Cover page, abstract, and reference list are mandatory for the final report.

- 11pt or 12pt font size for the main text, 1in margins on four sides. The text should be typeset single-spaced with *clear indentation and spacing between paragraphs*.

- For research proposal, *the proposal itself should be at least 1/5 long*, including: what problem(s) to address, suggested solutions, justification of your idea, expected outcomes, etc.

- For experimental efforts, the description of the experiments, results, and their analysis (including a comparison to related work) should at least be 1/5 of the report.

Potential Project Topics:

1. Software defined networking, software defined data centers
2. Network virtualization, Network function virtualization
3. Locator/Identifier Separation Protocol (LISP) and its applications
4. Cloud-ready networks, networks support for cloud computing
5. Cloud networking for data centers
6. Next generation Internet: Named Data Networking
7. Network security, anomaly detection, intrusion detection, and etc. (not cryptograph related topics)
8. Social networks: security, monitoring, and anomaly detection
9. Network protection and restoration, network coding for protection and restoration
10. QoS scheduling and routing
11. Content-based routing, content delivery networks
12. Green communications and networking, power-aware traffic engineering
13. Application level routing, application-aware traffic engineering
14. Packet sampling and profiling
15. Global private consumer IP networks
16. Multi-Homing
17. IPv6 and emerging applications/features
18. Consumer communications and networking
19. Multimedia (multimedia information networking and security), gaming and networking
20. Internet measurement
21. Other advanced topics related to networks