



College of Engineering-Dept. of Computer Science and Engineering

Computer Engineering program

Data Communication and Computer Networks II (CMPE-457)

Course project

Spring, 2023

Final mark: 20% of the total grade

Project will be delivered based on three phases

- **Phase I : Project Summary submission due:** (February 26th, 2020 midnight) any submission after that time will NOT be accepted.

Each group of *four or five* students needs to register on blackboard and submit one project proposal. The project proposal is a one pager in pdf (any other format will be rejected), which includes:

1. Title of the project
2. Student name (s) (*minimum 4 to maximum 5 students per group are allowed*)
3. Abstract: explain briefly what the problem is and why you are tackling this problem.
4. List at least 3-4 objectives for that project e.g. to study the effect of noisy channel on the performance of TCP, to measure the performance of EIGRP routing protocol with and without security, etc.
5. List the project deliverables (at least 3 deliverables) e.g. simulation model for an MAC layer to provide QoS, quantitative performance comparison between ..., and ..., etc.

- **Phase II : Interim project submission:** TBD

Interim project submission is a draft of the project report.

Before the deadline listed above, each group must do the following:

- Submit online a softcopy of the draft report in pdf (any other format will be rejected) showing the information under the "interim project report specifications".

Interim project report specifications:

You are asked to write a report of at least 3 double-column pages that discusses/analyzes the project description and outcomes so far. The report should include:

- *Abstract : not more than 100 words*
- *Introduction: includes some of the existing work in this subject*
- *System model: describe your elementary application architecture and design*
- *Elementary results and evaluation: If there are any elementary results, describe them here.*

Note:- you must use the project template posted on blackboard (will be provided separately). Please, remove all the text in the template and add your relevant text instead.

- **Phase III: Final project submission due: TBD**

- **Group presentations: (time: TBD)**

Submission components: (read the following instructions carefully)

Before the deadline listed above, each group must do the following:

- Submit online a softcopy of the final report as a separate pdf file (any other format will be rejected)
- Submit online a softcopy of the final project presentation as separate pdf file (any other format will be rejected).
- If the project implementation source is not too large, you can submit all implementation components online as a “separate” .zip file, otherwise, please copy all implementation components on a flash drive and put it my mailbox.

Final project report specifications:

You are asked to write a report of at least 5 double-column pages that discusses/analyzes the project description and outcomes. The report should include:

- *Abstract : not more than 100 words*
- *Introduction: includes some of the existing work in this subject*
- *System model: describe your application architecture and design*
- *Results and evaluation: list, draw, describe, and analyze all the results of this application.*
- *Conclusion: describe the main conclusions drawn from this application*

Note:- you must use the project template posted on blackboard. Please, remove all the text in the template and add your relevant text instead.

Project assessment Specification;

- Your report should be formatted and documented properly.

- A bonus of 1 extra mark may be given to a highly outstanding effort that exceeds the specified requirements and brings to the classroom very useful relevant knowledge.
- You should include in the final report a section of conclusions and discussions to highlight your opinion regarding the technologies investigated and documented in your report. Also, to demonstrate your opinion about the facts investigated and the results obtained.
- Material should be collected from at least **10** different sources. Use the proper IEEE referencing as shown in the project template, and avoid as much as possible using mostly URLs as references.
- You may use books, periodicals, and the Internet as sources of information. Every used source should be indicated in the text of the report and listed in the list of references.

Marking criteria

1. Project implementation and results.....(*7 points*)

Assessment Rubric of the project implementation		Effort			
		None	Unsatisfactory	Satisfactory	Distinguishable
No.	Assessment Point	1	2	3	4
1	Appropriateness of the design to study the problem in hand				
2	Quality of the implementation components (code or simulation), including robustness and error handling				
3	Appropriateness of the tools used				
4	Comprehensiveness of the scenarios studied				
5	Quality of the results achieved i.e. clear and rationalized results				

2. Report formatting: Literature survey and analysis correspond to all the assessment requirements as presented above, including a satisfied conclusion/discussion section..... (*8 points*)

Assessment Rubric of the final report		Effort			
		None	Unsatisfactory	Satisfactory	Distinguishable
No.	Assessment Point	1	2	3	4
1	Goodness of the structure and format of the report: First page information, sectioning, alignment of text, English writing, referencing.				
2	Introduction to the topic that gets the reader attention and interest to the topic is provided and the flow of information in the report as a whole is smooth and well inter-related.				

3	Explanations and discussions on basic concepts are clear and appropriate.				
4	Relevant non-basic topics are highlighted and fairly focused on.				
5	An activity sheet testing the understanding of conceptual and basic ideas is provided.				

3. Presentation, and demo (if time allows) (5 points)

Assessment Rubric of the project presentation		Effort			
		None	Unsatisfactory	Satisfactory	Distinguishable
No.	Assessment Point	1	2	3	4
1	Presented basic and conceptual ideas clearly				
2	Appropriate communication skills and interaction with the audience				
3	Expressed deep knowledge of the concepts related to the project topic				
4	Gradually and smoothly established discussions on non-basic ideas and provided awareness to advanced discussions relevant to the topic.				
5	Clarity of the answers to questions				

Suggested topics (You are highly encouraged to come up with your own ideas):

1. Performance evaluation of secure routing protocol(s) i.e. routing protocols with and without security (i.e. tackled using either simulation or implemented application).
2. Performance comparison of common routing protocols e.g. OSPF, EIGRP, and RIP (i.e. tackled using either simulation or implemented application with router configuration).
3. Performance evaluation of MAC techniques in wired or wireless networks, quantitative comparison (i.e. tackled using either simulation or implemented application).
4. Evaluation of Video delivery over different simulated network scenarios (i.e. simulation based study).
5. Client-server application for multimedia streaming over WLANs (i.e. implemented application).
6. Routing protocols over multi-hop wireless mesh networks (i.e. tackled using either simulation or implemented application using android mobile applications).
7. Implementation of a sensor network that involves sensing, collecting, and analyzing information.

8. Cellphone-based implementation for collecting and analyzing information for different applications e.g. health monitoring, video surveillance, etc.
9. Edge computing using machine learning for wireless networks, providing Quality of Service for a specific application e.g. Health, Surveillance, Blockchain, etc. (simulation or client-server implementation)
10. IoT monitoring using embedded software on microcontrollers e.g. Health, Surveillance, etc.