ECE 544/644-Trustworthy Computing

Final Project –Topics and Guidelines

Goals: The goal of the final project is to pursue research in a specific narrow topic in trustworthy computing, learn how to write a good research proposal and improve your presentation skills. The project will be done in groups of **two students**.

Please be cognizant of the fact that this project includes more than surveying a topic. You need to propose a "semi-new" concept. Do not be afraid to dare, even if the proposed concept is not new, but you defend it well and layout a good plan, you will get the full credit. This is NOT a MS or PhD proposal in which the topic has to be entirely unexplored. We will emphasize in our grading the fact that you have written the proposal well, explained your goals, the literature is surveyed well (not comprehensive, but what you surveyed is done well) and the proposed concept is exposed clearly. It is highly important to correlate your ideas with the existing works by showing concrete citations. Any work that cogs well with the existing work will be given high value.

In this document we provide a list of suggested topics as well as guidelines for the proposal writing. **Please read the rest of the document carefully.**

We will provide more details on Phase I, Phase II, Phase III and the presentation.

1. Suggested Research Topics

Here is a list of suggested general topics which include applications of trustworthy computing as well as technology developments. You are welcome to pick your own topic.

1. Secure software distribution
2. Security in Emergency Situations (e.g. DIORAMA system)
3. Secure databases for health data
4. Payment via GSM Mobile Phones
5. Secure body sensor devices
6. Android based medical records security
7. Security in implantable devices
8. Secure healthcare web services

9. Secure Assistive Technology (e.g. PERCEPT)
10. Ambient Assisted Living

Please use the IEEE Explore database through the UMASS library. It includes a vast repository of papers with a powerful search engine.

Phase 0: By September 24h submit through online poll three topics as soon as possible since the topics will be given following first in first served policy. We will try to accommodate your first choice. We will post the topics for all groups by September 27th
Online Poll Below:
https://docs.google.com/forms/d/1jUcyhYWNr6OVwMRbvDpaO7L53nqsiYC-m_yh1bTcCyk/viewform

Phase I: By October 8th submit through moodle a topic that you picked including a number of sentences (up to ½ page) that describe the topic as *well as a list of preliminary references (conference and journal papers, books, web sites, etc).*

Phase II:

Each group will submit through moodle by November 4ths a preliminary report containing 6 pages that outlines your proposal along with sound background study needs to be submitted. The preliminary report should contain an abstract, specific aims, background and significance and proposed work.
Each group will have a 5 minutes presentation during class time on November 5th and November 7th (check the web site for your assigned slot).

Phase III:

This is a final phase and each group will have a 15 minutes presentation outlining the improvement from the previous presentation and a comprehensive summary of your whole work. The presentations will take place November 26h - December 6th (check the web for your assigned slot) and the final report is due on December 9th**.** The final report should be up to **15 pages.**

ECE664 students: we will have the final project review of the working demo during the week of the finals.

2. Proposal Format

The proposal will follow the NIH PHS 398 guidelines and includes the following sections:

1. Abstract
2. Specific Aims
3. Background and significance
4. Preliminary studies
5. Research design and methods
6. Implementation details or Test Bed
7. Literature cited

More description on each one of the sections.

Abstract

It should contain a summary of the whole work along with general motivation. It should also briefly discuss the advantages of your system.

Phase III: *One page is recommended.*

A. Specific Aims

List the broad, long-term objectives and the goal of the specific research proposed, e.g., create a novel design, solve a specific problem, challenge an existing paradigm or develop new technology.

Phase III: *One page is recommended*

B. Background and Significance

Briefly sketch the background leading to this proposal, critically evaluate existing knowledge. State concisely the importance of the research described in this proposal by relating the specific aims to the broad, long-term objectives. If the aims of the application are achieved, state how scientific knowledge will be advanced.

Phase III: *Three to five pages are recommended.*

C. Preliminary Studies

In this project our preliminary studies part will be minimal, unlike the "real" NIH applications (in "real: NIH applications this is the most important part that established the experience and competence of the investigator to pursue the proposed project). Describe here one or more papers that are the most similar to the proposed approach which you will provide in the next section.

Phase III: *Three to five pages are recommended.*

D. Research Design and Methods

Describe the research design conceptual framework, procedures, and analyses to be used to accomplish the specific aims of the project. Include how the data will be collected, analyzed, and interpreted. Describe any new methodology and its advantage over existing methodologies. Describe any novel concepts, approaches, tools, or technologies for the proposed studies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims.

Phase III: *Two to three pages are recommended.*

E. Implementation Details or Test Bed

You should come up with a system architecture or software design.

ECE544: students: implementation details of a "proof of concept" are mandatory, whereas the implementation is not.

ECE644 students: your project needs to include an implementation (application/emulation/simulation/testbed).

Phase III: Two to three *pages are recommended.*