

Research Project

You will conduct a research project, either individually or with a partner. The project must pertain to intrusion detection and/or intrusion prevention. The project must consist of research and implementation. It may be software oriented or technology oriented.

Deliverables

There will be four deliverables throughout the semester.

1. Proposal (2/2/15)

The proposal will give the reader an introduction to your project. It will include two deliverables: a written proposal and a presentation. The proposal should include the following:

- Statement of problem to be addressed in the thesis
- Summary of candidate's own ideas and preliminary work
- Plan of action to bring the research to conclusion

2. Updates (2/23/15 and 4/6/15)

The updates will be informal presentations that will allow you to update your progress, allow you to demonstrate some preliminary work and solicit input. The update presentations should be 15-30 minutes.

The first update presentation should focus on related work and project design.

The second update presentation should focus on design, some preliminary findings, test plan, etc.

3. Final project (written and presentation)

The final presentation will be an overall presentation on your project. It must be 30-40 minutes, excluding the Q&A time. It should utilize a presentation tool, such as PowerPoint, be professionally done and presented, be interesting and informative and be a team effort.

You will also submit a written report for your project. Below is a suggestion outline for the contents, but it may vary depending on your project.

- Title page
- TOC
- Introduction: Provide brief overview, State research problem and hypotheses
- Literature review
- Methodology: How research was completed, Provide sufficient details so anyone reading it can replicate all essential aspects of your study, Possible sections – design, independent variables, measures, apparatus, setting, procedures, data analysis plan
- Results: Detail analysis conducted, Describe statistical procedures used to test hypotheses and address research questions, Provide and explain results
- Conclusion
- References
- Appendix (if necessary)

Guidelines for the written report:

- Utilize word processing software
- Double-spaced
- One-inch margins on all sides
- No larger than 12-point font
- Written in third person format; do not write in first person, such as I, we, me, you.
- In the footer, include the pager number, centered.
- Include a title page that includes the paper title, your name(s), course number and name, professor name, and date.

Bibliography

The bibliography must include any resource you use that was relevant to the research you conducted. This should include any resource cited in the text of the paper as well as ones not cited but used for research purposes. Wikipedia or similar web sites can be used to gain a basic introduction to your topic but should not be used for extensive research. You must follow proper APA style for references and citations. There are several links to the APA Guidelines on the course web site.

KU has a subscription to ACM and IEEE digital libraries. These are accessible via the library web page or the CS web page (under resources). You are strongly encouraged to utilize these libraries to find articles (if you access these sites off-campus, you must login or use your library ID).

If you use a direct quote or another person's idea, be sure to give them credit. A direct quote should be in quotes in your paper. You should use in-text citations for all direct quotes. You should use Numerical Citation [1], which means the sources are listed on the reference page numerically in order of appearance in the paper.

Numerical Citation Example:

[1] Lisa M. Frye. *Creating a Home Network*. Kutztown. Kutztown Press.

Some research tips

Your goal is to explain:

- Topic – what you are writing about (“I am studying...”)
- Question – what you don’t know about it (“because I want to find out...”)
 - What will answering the question tell us
 - Why is it important
 - Suggests relationship to be examined
- Significance – why you want your readers to know about it; your rationale (“in order to help my reader understand better...”)

Steps

- Identify interest
- Identify broad topic
- Focused topic
 - Use nouns derived from verbs, such as conflict, description, contribution, development, to move topic closer to a claim
 - A specific topic can serve as a working title
 - Try to pose and solve a problem that others also think is worth solving
- Develop questions about your topic, such as
 - Most important goal → find questions that challenge you and arouse your curiosity
 - Ask questions worth pondering (what makes it work asking; why will it interest readers)
 - Ask four kinds of analytical questions about the composition, history, categorization and values of your topic.
 - What are the parts of your topic and how do they relate to one another?
 - How is your topic part of a larger system?
 - How and why has your topic changed through time, as something with its own history?
 - How and why is your topic an episode in a larger history?
 - What kind of thing is your topic? What is its range of variation? How are instances of it similar to and different from one another?
 - To what larger categories can your topic be assigned? How does that help us understand it?
 - What values does your topic reflect? What values does it support? Contradict?
 - How good or bad is your topic? Is it useful?
 - Set aside questions whose answers you could look up in reference work
 - Try to combine smaller questions into larger, more significant ones
 - Select a question or two to kind your research systematically
 - Why should they grab the reader’s attention?
 - What makes them worth asking?
 - Find an answer you think you can support
- State your project as a problem that readers want to see solved
 - A research problem is motivated by incomplete knowledge or flawed understanding

Hypothesis (typically 3-4)

- Predictive statements about the expected outcome of the research
- Declarative statements that conjecture a relationship between 2 or more variables
- Derived directly from the research question
- Assert a relationship to be confirmed in the study (prove the hypothesis, don't disprove it)
- Predictive statements about the expected outcome of the research
- Indicates the specific relationships to be examined and suggests nature of relationships
- Dictate method and design of the research

Need consistency with research question, hypotheses, design, analysis and conclusions