

Graduate Term Paper Requirements

Includes Web page requirements for Undergraduate and Graduate

Provide a one-page proposal based on the term paper proposal guidelines. Try to follow that basic format (see the web page for the documentation standards). The length is your choice but again, a write-up that is too superficial as compared to one that is comprehensive will not receive as much credit.

Approximate outline for project paper (see Term Paper Proposal Guidelines below):

1. Problem Definition (e.g., FM / topic chosen and its applicability or rationale for your choice).
2. Known Solutions (e.g., Other appropriate FMs w/in the domain).
3. Motivation (e.g., Why is this an important problem and why are known solutions insufficient).
4. Discussion:
 - Definition and features of the FM
 - Features of the domain where this FM is applicable
 - Examples of how the FM is applied
5. Results (if any) from any experiments.
6. Conclusions (assess the applicability of the FM and/or the results).

Some possible topic areas include the following:

- Gaining assurance with Formal Methods
- Case Studies of Industrial Strength Usage of Formal Methods
- SES Workbench: Using Discrete Event Simulation (DES) for analysis of highly complex systems (when analytical methods are intractable)
- Promela/SPIN
- Modeling with Stochastic Petri Nets
- Formal Methods for Real-Time Computing
- Concurrent Systems: Formal Development in CSP (Communicating Sequential Processes)
- Formal Languages (algebraic sequential/concurrent, Model-based sequential/concurrent)
- Tools which support formal specification, verification and validation
- Stochastic approaches
- Proof of Correctness (logical, timing)
- Model checking (e.g., Promela/SPIN)
- Graphical/visualization of systems models
- Code synthesis / automatic software engineering

GUIDELINES FOR TERM PAPER PROPOSAL

1. INTRODUCTION:

- 1.2. *Specify what question or problem your paper will address*
- 1.3. *Tell me why your issue is problematic or significant*
- 1.4. *Talk (briefly) about what other attempts have been made to solve the question or problem*
- 1.5. *State your tentative (working) thesis*

2. BACKGROUND:

- 2.2. *Place your issue in the context of current research*
- 2.3. *Determine what background information is necessary to make the reader understand the significance of your assertions*

3. ARGUMENT: (This is the main body of the paper)

- 3.2. *How will you develop your claim?*
- 3.3. *What reasons and evidence will you use?*
- 3.4. *If there are not at least three or four sound arguments to support your thesis, your thesis needs to be changed.*

4. OBJECTIONS AND COUNTERARGUMENTS:

- 4.2. *Summarize the key arguments against your position. For example: are there other approaches to solving the problem and why are they less persuasive than yours?*
- 4.3. *Demonstrate that you are knowledgeable about the full complexity of the issue or problem*

5. CONCLUSION:

- 5.2. *Summarize your arguments*
- 5.3. *Relate your question or problem to a larger issue*
- 5.4. *What research still needs to be done?*