CS777 – Reliability Growth Models
Spring 2009

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Part A : Reading

- Download and skim this paper from blackboard - Software Reliability Engineering: A Roadmap, Michael Lyu (From "The Future of Software Engineering" Collection, 2007). (I put papers in blackboard when they are not to be made public for copyright reasons.)
- You should also skim the roadmap of Littlewood and Stringini. Software Reliability and Dependability: A Roadmap, Bev Littlewood and Lorenzo Strigini (From "The Future of Software Engineering" Collection, 2000) – link on my website.
- You should read the paper by Almering et al. on "Using Software Reliability Growth Models in Practice", 2007. This one is just to alert you as to how organisations may be using these models. This paper is in blackboard also.

NOTE: You do not need to memorise this stuff. It is background and context and I want you to focus on the parts on reliability modelling. I just want you to get a feel for what these models are and what are they used for. Skim these.

Part B : Investigating/Summarising

In class we looked at 3 samples of software reliability growth models. In particular, we looked in detail at the assumptions upon which they each are based. Your task for the week is to look into one model and prepare a **brief synopsis** on the following aspects about the model for the next class:

- List the assumptions underpinning the model (focusing on how it treats the uncertainty surrounding inputs that lead to failure and the uncertainty surrounding fault fixing).
- List the data requirements for the model (i.e. what you need to input into it).
- Summarise anything you find on the scope of applicability or known limitations.
- Can you find anything on where and how it is used?

Bullet points please, as in class, and **no more than one page**. Please email me a copy of your work and bring a hardcopy to class.

Please research your model (as we agreed in class):

- Duane
- S-Shaped
- Musa-Okumoto
- Schneidewind
- Hyperexponential
- Goel-Okumoto
- Geometric

If you cannot find sufficient detail, please feel free to research any other model (some examples here):

- Log Power

- Littlewood NHPP
- Keiller-Littlewood

You will need to skim Chapters 2 and 3 of Lyu but I want you to each find at least one other source of information to fill in the gaps (and bring this to class too, referenced on your one page document). Focus on the **concept** of the model and its assumptions/prerequisites rather than the math. If you are mathematically inclined and curious, you can read the 2 chapters in intricate detail with support from Appendix B, but nothing more than the simple math as explained in the class session is expected from you. You just need to know about these things and their applicability and use… not how to create them!

Part C : Term Paper 1

Please send me your proposed title, abstract and structure, along with any resources you propose to consult. I need to see this to make sure you are going to go down the right track. I posted 3 sample papers in Blackboard for you. I could not post papers on the culture theme due to company sensitivity of course!! The sooner and more often you show me what you plan to do, the better your paper will be.

Please do email me and let me know if any links you need on my website do not work. I do try to keep them up to date.