CptS/EE 562 Literature Survey Assignment

Spring, 2002

10% of final grade

(Updated February 15, 2002)

Bottom Line

Assigned: Thursday February 7, 2002

Due: Thursday March 7, 2002 in class (firm deadline). Hand in hardcopy to class, and also email the TA (David McKinnon, mckinnon@eecs.wsu.edu) a copy (.pdf or .doc or .dvi preferred) too. These will be put on the class web site, too, for others to read, so include your personal URL if you would like it linked in here. Be sure to include your paper title and personal URL in your email to David so that he can easily copy-and-paste it into the web page.

Caveat: Start Early! You are hereby warned…

Overview

In this assignment you will apply what you have learned in class to analyze 4-5 research papers (“primary papers”) in a related area (only 3 in some cases where it is a key area that only 3 are available for; you will have to explain that there are only 3). You will also skim 3-5 papers (“secondary papers”) cited in these primary papers to get a better feel for the topic. The basic idea is to analyze and summarize the state of the art in this field.

In all places in your report, you are expected to use technical terms carefully, as discussed in class and in Dependable Computing and Fault Tolerance: Concepts and Terminology. You should also be careful to have your citations in standard citation formats, and include URLs when they are available.

Organization of Your Report

Your report should be organized as follows:

- Abstract: a 150-200 word summary summarizing the technology/issues/problems (e.g., Byzantine quorum systems, high-performance multicast, etc) and summarizing the state of the art in that area. The first words of your abstract should be: “This report summarizes the state of the art in XXX as represented by papers [X,Y,Z]”, where XXX is the technology/issue/problem and [X], [Y], and [Z] are references below.

- Overview of Technical Issues: a half or full page explaining the technology and the issues involved. A figure is appropriate but optional (probably half of the students’ reports can use one, half not).

- Paper summaries: discuss the results, limitations, and strengths of each paper. 1 to 3 pages per paper.
• Analysis: 1 to 3 pages comparing and contrasting the papers reviewed. You will be expected to apply good judgement and your knowledge of fault tolerance, not just rehashing what the papers say. For example, your judgement about if the papers are making good points or are arguing about a “distinction without a difference”.

• Conclusions: 100-300 words summarizing the report.

• References: all papers mentioned in standard citation form. I prefer the format [JKZ93] for something with authors’ last names starting with ‘J’ and ‘K’ and ‘Z’ and year of publication 1993, not the [1] format (I have a horrible memory so I need the help remembering which paper you are citing when reading your reports). If there are more than 3 authors, do something like [JKZ+93]. The citation of course has the full author list, but the “label” for it (e.g., “[JZK+93]”) only has the first 3 authors’ initials, so the References section looks aesthetically pleasing!

You can cite the textbook too if it provides useful background on a specific issue, but include the section number probably to be helpful.

If you cite any web pages as the source, unless an author is listed, use the name of the organization (BBN Corp, UCSB for UC Sanata Barbara, etc), then the title of the web page, then its URL. Assume the date of publication is 2002, unless it says last updated in 2001 or something like that.

A sample format will be emailed to the class in .doc format at least 2 weeks before the due date.

Paper Sources

The sources below have two kinds of links: one for the conference or workshop itself (which usually contains the program, including the paper titles), and also the source for the conference papers (ACM or IEEE). Some conferences don’t have online sources (e.g., expensive publishers like Springer and Wiley), but you can almost always find the paper online with google or looking at the author’s web pages.

The WSU library has subscriptions for the online publications for the IEEE and ACM. They will not likely include most conferences and workshops in the last 6-12 months, so you will have to search for the paper like a Wiley or Springer paper.

(In general, if one cannot find a paper in their library or online, it is standard practice to email the author, and they are obliged as a matter of professional courtesy to send you an electronic or paper copy. Few authors mind this, and zero of the grad student authors! If you cannot, then the WSU library’s inter-library loan system can probably get you a copy, but I do not know how long it will take.)

We are focusing on papers published in the last 2-3 years, but if there is a need to include in your paper set a paper from as early as 1995, that is OK. Below are sources for the last 2-3 years only. Most conferences and workshops are every year at the same time each year (within a week), but some are every 18 or 24 months.

Most conferences are IEEE, and their overall paper web page is here. You can look at tables of contents, abstracts, etc but have to have the IEEE library configuration/password to access the full papers. Also, note that the conferences often have associated one-day or half-day workshops.
or “Fast Abstracts” or “Works in Progress” sessions that have shorter papers online that may be of interest (but do not count as a full paper in terms of your review number of papers).

Before I go into the list, note that a HUGE source of finding related work is CiteSeer. It probably won’t be needed for you on this project, but it can tell you who has cited your paper, which might give you an idea of related work.

**Top-Tier Conference and Workshops Completely or Mostly on Fault Tolerance**

The International Conference on Dependable Systems and Networks (DSN), IEEE/IFIP (Note: FTCS and DCCA merged to become DSN a few years back.)

- **DSN-2002** (FYI, program will probably not be out before the due date)
- DSN-2001 ([conference site](#), paper site at IEEE) (Textbook co-author Paulo was program co-chair.)
- DSN-2000 ([conference site](#), [paper site at IEEE](#))
- FTCS proceedings linked at [here](#); (caveat, “ftcs.org” used to be I think a site for this, but I just tried it and it’s a porno site!!) I have a DVD with the papers from all past FTCSs, so if you cannot find your paper then I can get David to email you the .pdf from it. FTCS-29 (1999) papers are [here](#). Bill Sanders (who I teamed up with on AQuA and who visited here in 2000) was program co-chair!

**Some Middle-Tier or Other Conference and Workshops Completely or Mostly on Fault Tolerance**

Symposium on Reliable Distributed Systems (SRDS), IEEE

- SRDS-2001 ([conference web site](#))
- SRDS-2000 ([conference web site](#), [paper site at IEEE](#))
- SRDS-1999 ([conference web site](#), [paper site at IEEE](#))
- SRDS-1998 ([conference web site](#), [paper site at IEEE](#))

Workshop on Object-Oriented Real-Time Dependable Systems (WORDS), IEEE

- WORDS-2002 ([conference web site](#))
- WORDS-2001 ([conference web site](#), [paper site at IEEE](#))
- WORDS-1999 ([conference web site](#), [paper site at IEEE](#))
- WORDS-1997 ([conference web site](#), [paper site at IEEE](#))

**Top-Tier Conferences and Workshops Often with Some Fault Tolerance**

International Conference on Distributed Computing Systems (ICDCS), IEEE
• ICDCS-2001 (conference web site, Hey, a paper I co-authored with Georgia Tech and U. Rennes (France) got best paper award!)

• ICDCS-2000 (conference web site, mirror site of conference web site, paper site at IEEE)

• ICDCS-1999 (conference web site, paper site at IEEE)

• ICDCS-1998 (conference web site, paper site at IEEE)

International Conference on Distributed Systems Platforms (Middleware), IFIP/ACM

• Middleware 2001 (conference web site, papers not online but I have the hardcopy if you cannot find on the author’s web page. Hey, my advisor’s (Schlichting) paper got best paper award!)

• Middleware 2000 (conference web site, papers not online but I have the hardcopy if you cannot find on the author’s web page)

• Middleware 1998 (conference web site, papers not online but I think I have the hardcopy if you cannot find on the author’s web page)

Some Middle-Tier or Other Conference and Workshops with Some Fault Tolerance

International Symposium on Distributed Objects & Applications

• DOA-2001 (conference web site)

• DOA-2000 (conference web site, paper source from IEEE)

• DOA-1999 (conference web site, paper source from IEEE)

Journals

There are really no journals dedicated to fault tolerance, other than the IEEE Transactions on Reliability which has almost nothing to do with fault tolerant distributed systems. Further, unlike many other fields, experimental “systems software” researchers do not usually bother with journal publications, because of their long lead times (1-3 years), so conferences are by far the preferred way to have “impact” with your research. To say that for experimental systems programmers journals are “almost a joke” is a bit too strong, and would offend some from other fields (or those that run the journals), so I won’t! They do have the one strong virtue of no (hard) page limitations.

Still, some top-tier journals that occasionally have fault tolerance papers in them are:

• IEEE Transactions on Parallel and Distributed Systems (very good stuff here, but be warned: they are still publishing papers on hybercubes, which died in industry years ago…..)

• Software: Practice and Experience

• ACM Transactions on Computing Systems (TOCS)
Some Example Paper Sets

Below are some paper sets that would be a good choice. These are only the primary papers that have to be read and summarized, the few that will also have to be skimmed are not included here.

But you can come up with your own choice. Just find a topic in the last year in the above workshops and conferences that interests you. Find one or two papers from it, then choose 2-3 more papers from the papers they cite. Voila! You have your own paper set, on a topic that interests you!

But here are some of the possibilities:

- **Byzantine fault-tolerant multicast**: Reiter Rampart, MIT “Practical” Byzantine fault tolerance, SecureRing, plus a DSN-02 paper accepted “Quantifying the Cost of Providing Intrusion Tolerance in Group Communication Systems” which gives full citations of previous 2. I have this paper and can give to the person who takes this set. Also DSN-2001 Session 10A paper #3. SRDS 2001 Session 4 paper #3; DOA-2001 paper “Transparent Dynamic Reconfiguration for CORBA” [Joey does, maybe room for one more]

  [Note: this topic has too many papers, so you could subset or two people could do it.]

- **Replication and (re)configuration**: DSN-2001 Session 3B papers 2,3; SRDS-2001 Session 1 paper #3; WORDS-2002 paper “Asynchronous Leasing”; Words-2001 paper “Reconfiguration of Resources in Middleware; ICDCS-2000 Session 8C paper #2; DOA-2001 paper “Coordinating the Simultaneous Upgrade of Multiple CORBA Application Objects”

  [Note: this topic has too many papers, so you could subset or two people could do it.]

- **Replication and security**: DSN-2001 Session 4B papers 1,3,4; Find Mike Reiter’s home page (oops, its here; he left ATT research for CMU. This has lots of great links to research involving the intersection of fault tolerance and security.)

- **Wireless/mobile and fault tolerance**: DSN-2001 Session 5A paper 1; SRDS-2001 Session 6 papers 1,6; WORDS-2002 paper “Scalable Group Membership Service for Mobile Internet”;

- **Real-time fault tolerance**: DSN-2001 Session 7A papers 2,4; get at least one recent paper from Prof. Hermann Kopetz (google will find him, or search in recent DSNs) [Wes does]

- **Group communication (non-Byzantine)**: DSN-2001 Session 9A paper 2; [Kevin]

- **Byzantine diffusion**: SRDS-2001 Session 3 paper 2 (trace its related work for rest of paper set); [Ioanna does]

- **Gossip-style multicast**: start with the SpinGlass project at Cornell (Birman et al), search for “gossip” in the online DSN and SRDS proceedings, look at others if not enough papers. [Ty does]

- **Byzantine-tolerant replication**: SRDS-2001 Session 5 paper #2, DSN-2002 to-appear paper on ITDOS (Prof. Bakken has); follow some references (if any) [Likely Sudipto]
• **FT CORBAs**: (Eternal, AQuA, DOORS, IRL – Prof. Bakken has); WORDS-2001 paper “Using Semantic Knowledge of Distributed Objects to Increase Reliability and Availability”; DOA-2001 paper “Lightweight Fault-Tolerance in CORBA”

• **Inexact voting**: (2 cited in book chap 7); ICDCS-2001 Session 4a paper #1; [Andy does]

• **Quorum systems**: ICDCS-2001 Session 4A paper #3; ICDCS-2000 Session 8C paper #1;

• **Optimistic fault tolerance**: SRDS-2000 Session 2 paper #2; ICDCS-2001 Session 5A paper #1 (“Optimistic Active Replication”); follow a few of their citations for a few more.

• **You can choose your own topic, remember**: look at the papers on the conference links to see what researchers are grappling with in the last few years! Come up with a paper set somehow related, then go for it!