

GCMPS 266 - Formal Specification and Verification
Winter 2009

The following list of topics is not meant to be exhaustive, but rather to serve as a guide to the types of topics available.

- Axiomatic Definition for a Language with Side Effects
- Automatic Generation of VCG from Hoare Axioms
- Automatic Generation of Loop Invariants
- Total Correctness
- Verification of Exception Handlers
- Formal Specification and Verification Languages
 - Anna, Eves, Larch, Trace Specifications, Unity, VDM, Z, B
- Statecharts and STATEMATE
- Specification and Verification of Concurrent Systems
 - CSP, Ada Tasking, Symbolic execution of concurrent programs
- Specification and Verification of Real-Time Systems
 - ESTEREL, Lustre, Modechart
- Temporal Logic
 - TRIO
- Composability
- Hardware Verification/ Verification of Microprograms
- Testing Specifications/Executable Specifications
- Automatic Generation of Test Cases from Formal Specifications
- Theorem Provers: PVS, Boyer-Moore, Otter, HOL
- Decision Procedures/Cooperating Decision Procedures
- Constraint Analyzers
- Model Checkers: FDR, nuSMV, SMV, SPIN, SLAM, Murphi, Bandera
- Proof Carrying Code
- Applications
 - Protocols: communication, encryption
 - Operating Systems
 - Databases
 - Compilers
 - Oscilloscope

The following proceedings and journals are likely places to look for information on these topics.

- IEEE Transactions on Software Engineering*
- ACM Transactions on Software Methodology*
- Journal of the ACM*
- IEEE Software*
- IEEE Computer*
- Communications of the ACM*
- Proceedings of the International Conference on Software Engineering
- Proceedings of the European Software Engineering Conference
- Proceedings of the Foundations of Software Engineering Conference
- Proceedings of Symposium on Testing, Analysis, and Verification - TAV, ISSTA