CSE2002 - Theory of Computation and Compiler Design
Assignments Topics
Theory of Computation

1. Recent Trends and Applications in automata theory:
    a) Regulated Rewriting
    b) Marcus Contextual Grammars
    c) Lindenmayer Systems
    d) Grammar Systems and Distributed Automata.

2. New computational model
    a) DNA Computing
    b) Membrane Computing
    c) Tissue P Systems
    d) Cellular Automata

3. Variants of Finite Automata :
    a) Two-Way Finite Automata
    b) Multihead Finite State Automata
    c) Probabilistic Finite Automata
    d) Weighted Finite Automata and Digital Images.

4. Application of finite automata in networking
5. Application of finite automata in search engines
6. Application of Regular expression in search engine optimization
7. Application of context free grammar in natural language processing
8. Applications of context free grammar in speech recognition
9. Applications of grammar in speech recognition
10. Applications of regular expression in network security
11. Application of automata theory in economics
12. Application of automata theory in game theory
13. Connection between automata theory & Number theory
14. Application of regular language using cellular automata
15. A study of star height problem to find the minimum number of nested stars needed in a regular expression for a given language
16. A survey on natural languages using formal language
17. A Study on graph grammar and its applications
18. A study on Turing machine and its applications

Compiler

1. Compiler and Runtime Support for Programming in Adaptive Parallel Environments
2. Inter procedural Partial Redundancy Elimination and Its Application to Distributed Memory Compilation
3. Inter procedural Compilation of Irregular Applications for Distributed Memory Machines
4. Inter procedural Communication Optimizations for Distributed Memory Compilation
5. Inter procedural Data Flow Based Optimizations for Compiling Irregular Applications
6. Distributed Memory Compiler Design for Sparse Problems
7. Slicing Analysis and Indirect Access to Distributed Arrays
8. Runtime Support and Compilation Methods for User-Specified Data Distributions
9. An Integrated Runtime and Compile-Time Approach for Parallelizing Structured and Block Structured Applications
10. Compiler and Runtime Support for Structured and Block Structured Applications
11. Runtime-Compilation Techniques for Data Partitioning and Communication Schedule Reuse
12. Compilers and Runtime Software for Scalable Processors
13. Runtime Compilation for Multiprocessors