Course Outline
30 August 2011

1. Structure of optimizing compilers; JVM and its intermediate representation Abstractions of storage reference behavior.
2. Control flow and program call graphs; Depth-first spanning trees.
6. Dominance frontiers.
7. Control dependence; Computation of dominance frontiers.
8. Problems solved over flow graphs: intervals; Cocke-Allen intervals;
10. Data flow frameworks.
11. Iterative solution of data flow problems.
12. Elimination solution of data flow problems.
14. Static single assignment form; Constant propagation.
15. Classical data flow problems and solutions.
17. Reduction in strength; Induction variable analysis.
18. Alias analysis.
19. Incremental data flow algorithms; Demand-driven data flow analysis.
20. Parallel languages.
23. Program dependence graphs; Program slicing
24. Vectorization; Loop distribution;
25. Direction vectors; Data dependence.
27. Sequencing and privatization.
28. Loop Interchange.
29. Loop Reversal; Other transformations.
30. Data dependence decision algorithms.
31. Recurrences.
32. Storage management.