Curriculum Vitae

Sanjeev K Aggarwal
Professor
Department of Computer Science and Engineering
Indian Institute of Technology Kanpur
Kanpur - 208 016, INDIA

Contact Information:

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+91 98390 86016 (mobile)
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URL: http://www.cse.iitk.ac.in/users/ska

Areas of Research Interest:

Program Analysis for improving quality of code for multi-core and other advanced processosrs, program analysis for improving and checking quality of code. Related area of research are: Grid Computing, Compiler Design, High Level Translators, Code Generation, Compilers for High Performance Architectures, Data Dependence Analysis, Application of Language Processing Technology In Tools for Software Engineering.

General Information

Sanjeev K Aggarwal is with the Department of Computer Science and Engineering at IIT Kanpur where he was the head of the department during Aug 2002-Dec 2005. He has about twenty years of reserach and teaching experience in the area of Compiler Design. For his PhD thesis, he worked on Automatic code Generation problem and developed a frame work for retargetable code generation (advisor Professor Vishv M Malhotra). This work was later used in Industrial compilers. He has published extensively in international forums and has handled a large number of industry/government funded projects.

He worked with Tata Research Development and Design Centre, Pune from 1986 to 1990. At TRDDC he was project leader for CHILL compiler suite which were developed for C-DOT's digital switches. The project involved development of highly optimizing CHILL compilers and debuggers. This was a large project involving about 12 programmers over a period of three years. He has hands on experience with compiler development, testing and project management.

His main theme of the work is program analysis to improve quality of code for multi-core and advanced computer archiecture, and to check and verify properties of programs. The related areas are Grid Computing, High Performance Computing, Compilers for High Performance Architectures, Compiler Design, Code Optimization, Code Generation, and Application of Language Processing Technology in Tools for Software Engineering. He has been teaching courses on Grid Computing, Compiler Design, Compilers for High Performance Architectures, and Programming languages.

Personal

- **Name**: Sanjeev K Aggarwal
- **Date of Birth**: December 27, 1957
- **Nationality**: Indian
- **Sex**: Male
- **Marital Status**: Married
- **Address for Communication:**
  Department of Computer Science and Engineering
  Indian Institute of Technology, Kanpur
  Kanpur - 208016, INDIA
  Voice: +91-512-2597614 (work), 2598460 (home), +91 - 98390 86016 (Mobile)
  Fax: +91-512-2597586, 2590725
  Email: ska [AT] iitk [DOT] ac [DOT] in
  URL: www.cse.iitk.ac.in/users/ska

- **Areas of Research interest:**
  Grid Computing, Compiler Design, Language to Language Translators, Code Generation, Compilers for High Performance Computers, Data Dependence Analysis, Application of Language Processing Technology In Tools for Software Engineering.

- **Education:**
  BSc (Hons), Hindu College, University of Delhi, 1974-1977
  MSc, Hindu College and, Dept of Physics, University of Delhi, 1977-1979
  MTech IIT Kanpur, 1979-1981
  PhD Computer Science, IIT Kanpur, 1981-1987

- **Employment Record:**
  Jan 2008 - Jan 2011: Dean of Resource Planning and Generation
  Aug 2002 - Dec 2005: Head, Department of Computer Science and Engineering, IIT Kanpur
  Jan 1997 - Jan 2003: Head, Computer Centre, IIT Kanpur
  Dec 1999 - to-date : Professor, Department of Computer Science and Engineering, IIT Kanpur
  May 1994 - Dec 1999: Associate Professor, Department of Computer Science and Engineering, IIT Kanpur
  May 1990 - May 1994: Assistant Professor, Department of Computer Science and Engineering, IIT Kanpur
  Aug 1986 - May 1990: Research Scientist and Consultant, TRDDC, Pune

Administrative Experience

- Dean of Resource Planning and Generation, IIT Kanpur, Jan 2008-tilldate
- Head, Department of Computer Science and Engineering, Aug 2002-Dec 2005
- Head, Computer Centre, IIT Kanpur, for two terms Jan 1997-Dec 1999 and Jan 2000-Jan 2003
- Warden in Charge of Hall 5, IIT Kanpur, 1994-1995
- Warden of Hall-5 at IIT Kanpur, 1993
- Project Manager at TRDDC, Apr 1987 - May 1990
- Have handled responsibilities like Lab incharge, Admissions incharge, DPGC convenor on behalf of the department

Research Papers

1. Kumar Sanjeev, V M Malhotra, "Automatic Retargetable Code Generation: A New Technique", Proceedings of Sixth Conference on Foundations of Software Technology and Theoretical Computer Science, Lecture Notes in Computer Science series, vol. 241, Springer-Verlag, 1986, 57-80. Available online at Springer LNCS online

2. Nori K V, Sanjeev Kumar, M Pavan Kumar, "Retrospection on PQCC Compiler Structure", Proceedings of Seventh Conference on Foundations of Software Technology and Theoretical Computer Science, Lecture Notes in Computer Science series, vol.287, Springer-Verlag, 1987, 500-527. Avail able online at Springer LNCS online

3. Nori K V, Sanjeev Kumar, R V Deodhar, "Experience With a Retargetable Code Generator",Proceedings of Workshop on Compiler-Compiler and High Speed Compilation, Berlin, 1988, 412-426.

4. Malhotra V M, Sanjeev Kumar, "A Divide and Conquer Approach to Code Selection", Proceedings of International Computer Symposium 1988, Taipei, Taiwan, Republic of China, 1988.

5. Kumar Sanjeev, M Pavan Kumar, M Subramaniam, V S Buzruk, "Tool Based Approach to Development of Optimizing CHILL Compiler", Proceedings of 5th CHILL Conference, Brazil, 1990, 46-53.

6. Karve A, Karnick H, Kumar Sanjeev, "A Modular Approach to Constraint Logic Programming", Conference on Logic Programming and Non-monotonic Reasoning, Lisbon, 1993.

7. Kumar Sanjeev, R Ananda, "A Fortran-D Parallelizing Compiler", Proceedings of Australasian Conference on Parallel and Real Time Systems, Australia, 1994, 11-21.

8. Kumar Sanjeev, R Ananda, S Gautam, "FRAME: A Fortran-D Compiler, Proceedings of Supercomputing Symposium", Canada's Eighth Annual High Performance Computing Conference, Canada, May 1994, 331-338.

9. Srinivas P L, T V Prabhakar, Sanjeev Kumar, "COBSQL: An Aid for Re-engineering Cobol Programs", Proceedings of the International Conference on Computer Systems and Education, Bandalore, 1994, 212-220.

10. Ananda R, S Gautam, Sanjeev Kumar, "Compiling Fortran-D for Multi Processors", Proceedings of the First International Workshop on Parallel Processing, Bangalore, Dec 1994, 117-122.

11. Moona R, S Kumar, "Twine-Risc: A High Performance Multithreaded Risc Architecture", Proceedings of the First International Workshop on Parallel Processing, Bangalore, Dec 1994, 222-227.

12. Singhai S, R K Ghosh, S Kumar, "GAtest: An exact Dependence Test", Proceedings of the International Conference on High Performance Computing, Delhi, Dec 1995, 523-528.

13. Praveen K V, Sanjeev Kumar, R K Ghosh, "Incremental Data Dependence Analysis", Proceedings of the International Conference on High Performance Computing, Trivendrum, Dec 1996. Available online at IEEE Digital Library

14. Kumar Sanjeev, U Bhattacharya, "Automatic Generation of Test Coverage Analyzers?, Proceedings of 22nd Annual Software Engineering Workshop, NASA Green Belt, Dec 1997, 353-368.

15. Aggarwal Sanjeev Kumar, D Kakati, "Tools to Enforce Software Coding Standards", QAI Software Testing Conference 2000, Available online at Softwaredioxide.com

16. Saha S, K Choudhuri, R Maloo, Sanjeev Kumar Aggarwal, "A Scheme for Automatic Data Layout in Distributed Machines", Proceedings of International Conference on Networks, Parallel and Distributed Processing and Applications (NPDPA 2002), Tsukuba, Japan, Oct 2002, 247-252 .

17. Maloo, R, Sanjeev Kumar Aggarwal, "A Distribution Analysis Technique for Automatics Data Layout for Distributed Memory Machines", Proceedings of 6th International High Performance Computing Conference, Bangalore, Dec 2002, 41-44.

18. Aggarwal Sanjeev Kumar, R S Venkataraghavan, "Automated Generation of Code Compliance Checkers", Proceedings of 21st International Conference on Applied Informatics 2003 (SE 2003) Innsbruck, Austria, Feb 2003, 961-966.

19. Karuri K, Sanjeev Kumar Aggarwal, "A Framework to Generate Code Optimizers Automatically", Proceedings of International Conference Computer Science and Technology 2003, Mexico, May 2003, 71-76.

20. Vyas, Ashutosh, Sanjeev Kumar Aggarwal, "Optimized Code Generation for Adaptive Irregular Problems" Proceedings of High Performance Computing in Science and Engineering 2003, Moscow, Jun 2003.

21. Khan G M, Sanjeev Kumar Aggarwal, "Test Coverage Analysis: A Method for Generic Reporting", Proceedings of Seventh Conference on Software Engineering and Applications 2003, Los Angeles, Nov 2003.

22. Biswas Shiladitya, Sanjeev Kumar Aggarwal, "A Technique for Extracting Grammar From Legacy Programs", Proceedings of 22nd International Conference on Applied Informatics 2004 (SE 2004) Innsbruck, Austria, Feb 2004, 652-657.

23. Jain, Rahul, Sanjeev Kumar Aggarwal, P Jalote, Shiladitya Biswas, "An Interactive Method for Extracting Grammar from Programs", Software – Practice and Experience, vol 34, 2004, 433-447. Available online at Sofware Practice and Experience

24. Mishra, Chaitanya, Manav Ratan Mittal, Sanjeev Kumar Aggarwal, "Checkpointing Fortran/MPI programs for Computational Grid", Proceedings of Advances in Computer Science and Technology, St Thomas Virgin Islands, USA, Nov 2004, 134-139.

25. Kumar, Ritesh, Ragesh Jaiswal, Sanjeev Kumar Aggarwal, "An Inlining Technique in Jikes RVM to improve Performance", Proceedings of Advances in Computer Science and Technology, St Thomas Virgin Islands, USA, Nov 2004, 140-144.

26. Prasanth Y, Sanjeev Kumar Aggarwal, "From Specifications to Code Compliance Checkers", Proceedings of 23rd International Conference on Applied Informatics, Software Engineering 2005 (SE 2005) Innsbruck, Austria, Feb 2005, 287-292.

27. Vikram K, Kumar Avijit, Sanjeev Kumar Aggarwal, "olyMPIx - A Program Parallelization Tool using MPI on Computational Grids", Proceedings of 23rd International Conference on Applied Informatics, Parallel and Distributed Computing and Networks, 2005 (PDCN 2005) Innsbruck, Austria, Feb 2005, 307-312.

28. Dubey Alpana, Pankaj Jalote, Sanjeev Kumar Aggarwal, "A Technique for Extracting Keyword Based Rules from a Set of Programs", Proceedings of 9th European Conference on Software Maintenance and Re-engineering (CSMR), Manchester, UK, March 2005, 217-255. Available online at IEEE Digital Library.

29. Jain, Anshu, Sanjeev Kumar Aggarwal, "A Library for Parallelization of Irregular Applications", Proceedings of Thirteenth International Conference on Advanced Computing and Communications (ADCOM 2005), India, Dec 2005, 173-179.

30. Dubey Alpana, Pankaj Jalote, Sanjeev Kumar Aggarwal, "A Deterministic Technique for Extracting Keyword Based Grammar Rules from Programs", Proceeding of the 2006 ACM Symposium on Applied Computing (ACM SAC 2006), Dijon, France, April 2006, pp 1631-1632. Available online at ACM Digital LIbrary

31. Kadav, Arati, Sanjeev Kumar Aggarwal, "A Workflow Editor and Scheduler for Composing Applications on Computational Grids", Workshop on Scheduling and Resource Management for Parallel and Distributed Systems (SRMPDS'06), Proceedings of 12th International Conference on Parallel and Distributed Systems (ICPADS'06), July 2006, pp. 127-132. Available online at IEEE Digital LIbrary.

32. Dubey Alpana, Pankaj Jalote, Sanjeev Kumar Aggarwal, "Inferring Grammar Rules of Programming Language Dialects", Proceedings of 8th International Colloquium on Grammatical Inference (ICGI 2006), LNAI 4201, Springer Verlag, Tokyo, Japan, September 2006, pp 201-213. Available online at Springer LNCS online

33. Bhatele Abhinav, Sanjeev Kumar Aggarwal, "Compiler Algorithm Language (CAL): An Interpreter and Compiler", Proceedings of the Third International Conference on Advances in Computer Science and Technology, Thailand, April 2007, 471-476.

34. Sorde Sumit W, Sanjeev Kumar Aggarwal, Jie Song, Melvin Koh, Simon See, "Modeling and Verifying Non-DAG Workflows for Computational Grids", Proceedings of 1st International Workshop on Web Service Composition and Adaptation

(WSCA-2007), held in conjunction with 5th International Conference on Web Services (ICWS-2007), Salt Lake City, USA, July 2007, 237-243. Available online at IEEE Digital Library.

35. Mishra Vivek, Sanjeev Kumar Aggarwal, "An Ontology-based Service Discovery System for Workflow Composition", Proceedings of 26th International Conference on Applied Informatics, Software Engineering 2008 (SE 2008) Innsbruck, Austria, Feb 2008, 153-158

36. Dubey Alpana, Pankaj Jalote, Sanjeev Kumar Aggarwal, " Learning Context Free Grammar Rules from a Set of Programs", Special issue on LANGUAGE ENGINEERING, IET Software Journal, vol 2, 2008(3), 223-240. Available online at IET Digital Library.

37. Gorde Nitin, Sanjeev Kumar Aggarwal, "A Fault Tolerance Scheme for Hierarchical Dynamic Schedulers in Grids", Proceedings of Workshop on Scheduling and Resource Management for Parallel and Distributed Systems (SRMPDS'08), Portland, September 2008, 53-58. Available online at IEEE Digital Library

38. Sharma Kamal, Sanjeev Kumar Aggarwal, Mainak Chaudhuri, Sumit Ganguly, "Fast Cache-Miss Estimation of Loop Nests using Independent Cluster Sampling", Proceedings of the First International Workshop on New Frontiers in High-performance and Hardware-aware Computing (HipHaC'08), In conjunction with Micro 41, Lake Como, Italy, Nov 2008, 55-64.

39. Bhatotia Pramod, Sanjeev Kumar Aggarwal, Mainak Chaudhuri, "Compiling Irregular Accesses for the Cell Broadband Engine", Proceedings of Students Research Symposium at International Conference on High Performance Computing 2008, Bangalore, India, Dec 2008,

40. Gorde Nitin, Sanjeev Kumar Aggarwal, "A Hierarchical Dynamic Scheduler for Grid Workflow Applications", Proceedings of Workshop on Grid and Utility Computing at International Conference on High Performance Computing 2008, Bangalore, India, Dec 2008,

41. Bhatotia Pramod, Sanjeev Kumar Aggarwal, Mainak Chaudhuri, "A Compilation Framework for Irregular Memory Accesses on the Cell Broadband Engine", Proceedings of High Performance Computing Asia 2009, Kaohsiung, Taiwan, March 2009,

42. Sharma Kamal, Sanjeev Kumar Aggarwal, "Energy Aware Scheduling on Desktop Grid Environment with Static Performance Prediction", Proceedings of High Performance Computing and Simuation Symposium (HPCS), San Diego, USA, March 2009, Available online in ACM digital library

Edited Volumes

- Nori K V, Sanjeev Kumar, (Eds), "Proceedings of Eighth Conference on Foundations of Software Technology and Theoretical Computer Science", Lecture Notes in Computer Science series, vol. 338, Springer Verlag, 1988.
- John Joseph, Sanjeev Kumar Aggarwal (Eds), "Proceedings of the International Conference and Exposition on Communications and Computing, ICCC-05", Organized by IIT Kanpur and Institute of Electronics and Telecommunications Engineers, Feb 4-6, 2005. Conference website
- Parashar Manish, Sanjeev Kumar Aggarwal (Eds), "Proceedings of 5th International Conference on Distrbuted Computing and Internet Technologies", Lecture Notes in Computer Science Series, vol. 5375, Springer Verlag, 2008
- Aggarwal Sanjeev Kumar, Umesh Bellur, Srinivas Padmnabhumi. "Proceedings of the 3rd India software engineering conference", Mysore, India, 2010, Available online in ACM Digital Library

Book Chapter

- Aggarwal Sanjeev Kumar and M Sarath Kumar, "Debuggers for Programming Languages" in The Compiler Design Handbook: Optimizations and Machine Code Generation, Editors Y. N. Srikant and Priti Shankar, CRC Press, 2002. See details at CRC Press website

Projects

Sponsored Projects

- CHILL Tool Set for C-DOT's Digital switching systems, C-DoT Delhi, 1987-1990
- Tools for Software Quality Testing, ARDB Bangalore, 1996-1999
- Impact Analysis Tool and Its use in Year2000 problem, Infosys, Bangalore, 1997-1998
- A Logic Based Approach for Enforcing Coding Standards, Wipro Infotech, 1997-1998
- Super-compiler for Supercomputers, AICTE, 1997-2000
- Recovery of Grammars from Legacy Programs, Mahindra British Telecom, 1999-2000
- Code Compliance Tools, Mahindra British Telecom, 1999-2000
- Automatic Generation of Test Coverage Analyzers, Mahindra British Telecom, 1999-2000
- Equipment grant for setting up Advanced Compilers Laboratory, Sun Microsystems, USA, 1999
- Dependence Analysis of Programs, Sun Microsystems, USA, 2001-2003
- Tools for checking quality of programs, Ministry of Information Technology, 2000-2002
- Computerization of UP-PWD, PWD Government of UP, 2001
- Equipment grant for Advanved Compilers laboratory, Sun Microsystems, USA, 2003
- Tools for Computational Grid, Sun Microsystems, USA, 2004
- Equipment grant for setting up a grid of Sun Workstations, Sun Microsystems, USA, 2005
- Curriculum Development for Program Optimization for Multicore Architectures, Intel, USA, 2006-2008
- Configurable Static Code Analysis Tool, Siemens India, 2008

Softwares Developed and Delivered

- Code Generator Generator that reads machine specifications and generates Code Generator. The tool has been used in many compiler projects at TRDDC Pune.
- A set of CHILL (CCITT's High Level Language) Compilers for C-DOT's Digital Switch, M68000 and VAX machines, and Linkers, Debuggers to C-DOT. This tool set has been used by C-DOT to develop and deploy switch software.
- A set of Test Coverage Analyzer for C and Ada programming languages to ARDB.
- A set of Code Compliance Tool for C and Ada Programming Languages to ARDB.
- Techniques for generic code compliance tools and test coverage analysis, Transferred to STQC of DIT and converted into products.

Courses Taught

- ESc101: Fundamentals of Computing
- CS210: Data Structures
- CS335: Fundamentals of Compiler Design
- CS350: Principles of Programming Languages
- CS355: Programming Tools and Techniques
- CS397: Special Topics in Computer Science
- CS497: Special Topics in Computer Science
- CS602: Fundamentals of Computer Systems
- CS638: Compilers for Advanced Computer Architectures
- CS639: Compilers for Parallel Processors
- CS654: Denotational Semantics
- CS698Z: Program Optimization for Multicore Architectures
- CS697: Special Topics in Computer Science
- CS728: Topics in Grid Computing
- CS738: Advanced Compiler Optimizations
- CS797: Special Topics in Computer Science
- SY202: Systems Analysis and Design

Semester wise break up

Year	Semester I	Semester II
1990-91	CS638	CS335
1991-92	CS638, CS654	CS335, ESc101T
1992-93	ESc101	CS335
1993-94	CS639, SY202	CS335
1994-95	CS639, ESc101T	CS210
1995-96	CS639, CS350	CS335
1996-97	CS638, CS602	CS335
1997-98	CS638, CS602	CS335
1998-99	CS738, CS602	CS335
1999-00	CS738, CS602, CS355	CS335
2000-01	CS738, CS350, CS355	CS335, CS698S
2001-02	CS738, CS355, CS497	CS335, CS497
2002-03	CS738, CS355, CS497, ESc101T	CS335, CS497
2003-04	CS738, CS355, CS497	**CS335**, Esc01T
2004-05	**CS738**, CS355, CS497	**CS335**, CS728
2005-06	**ESc101N**, CS355, CS697	**ESc101N**
2006-07	**CS698Z**, CS355	CS335, CS697
2007-08	CS698Z, CS355, CS497, CS797	**CS335**, CS355
2008-09	**CS738**	**CS335**, CS355, CS397
2009-10	**CS738**	CS335, CS355

PhD Thesis Supervised

1. Inferring Grammar Rules from Programs, Alpana Dubey, July 2006
2. Program Verification, Saurabh Joshi, In Progress
3. HPC using Graphic Processor Units, Vibha Patel, In Progress

MTech Thesis Supervised

1. A Method for Compiler Generation using Rewrite Rules, K C S Reddy, Jan 1991
2. F2C: A F77 to C Covertor, J Mahesh Kumar, Jul 1991
3. A Systolic array Parallelizing Compiler, C S Raghvendra Feb 1992
4. A Modular Compiler Structure: Its Design and Implementation for C, K Venu Madhav Apr 1992
5. A Workbench for Denotational Semantics, S Shylaja, Jan 1993
6. A modular Distributed Constrained Logic Programming System, A Karve, Jan 1993
7. Fortran-D Parallelizing Compiler: Restructuring Phase, R Ananda, Feb 1993
8. Fortran-D Parallelizing Compiler: Scheduling Phase, S Gautam, Feb 1993
9. On Re-engineering Cobol Programs, P L Srinivas, Mar 1993
10. Frontend of a SISAL compiler, V P Riyaz, Mar 1993
11. Fortran-D Parallelizing Compiler: Frontend Phase, R K Singh, Apr 1993
12. Program Development Environment for Twine RISC machine, P Shyamsunder, Feb 1994
13. Optimization of Fortran90 Programs: Alias Analysis, B Murali, Apr 1994
14. Code Generator for Convex-220, G Narasimhan, Oct 1994
15. Optimizing Loops for Execution on Vector Processors, S Govindraj, Feb 1995
16. Automatic Parallelization of Loops, B Muralidhar, Feb 1995
17. Data Dependence Tests for Loop Parallelization, S Singhai, Feb 1995
18. Code Generator for Twine-RISC, M S S Rao, Feb 1995

19. Design, Simulation and Algorithm Mapping for A DSP Multiprocessor array-I, S Kamath, Feb 1995
20. Design, Simulation and Algorithm Mapping for A DSP Multiprocessor array-II, B Venugopal, Feb 1995
21. A G-Machine Based Compiler for Lazy and Eager Functional Languages, E K Kumar, Mar 1995
22. Re-engineering: Cobol to C-SQL, A Sathish Kumar, Feb 1996
23. Recovery of data model from Cobol programs, S Suresh Kumar, Apr 1996
24. Incremental data dependence analysis, K V Praveen, Apr 1996
25. Compiling HPF for network of workstations, Davi Gupta, Apr 1996
26. Enhancement of Gatest, Ch Sudhakar, Apr 1996
27. Tools for enforcing software coding standards, D Kakati, Jan 1997
28. A generative approach for development of Test coverage analyzers, U Bhattacharya, Jan 1997
29. Impact Analysis and Its Applications in the Year2000 Problem, H S Paul, Apr 1998
30. A Logic Based Approach for Enforcing Coding Standards, S Gorti, Mar 1998
31. Compiler Back End Generation from nML Machine Description, Shishir Mondal, Jun 1999
32. Recovery of Grammars from Legacy Programs, Rahul Jain, Feb 2000
33. Automatic Generation of Code Compliance Tools, R S Venkata Raghavan, Mar 2000
34. Automatic Generation of Coverage Analyzers, G M Khan, Apr 2000
35. Parallelization of Application Programs for a Network of Work Stations using MPI, Yatin Nayak, May 2000
36. Development of Code Generator Generator for GNU Set of Compilers, Prashant Pogde, May 2000
37. A Framework for Automatic Generation of Code Optimizers, Kingshuk Karuri, May 2001 (won the Cadence Medal for the best thesis)
38. A Framework for Automatic Data Layout for Distributed Memory Machines, R Maloo, Apr 2001
39. A Workbench for Loop Transformations, B V Mohan Reddy, Apr 2001
40. Debugging Optimized Code: Value Change Problem, M Sarath Kumar, Apr 2001

41. Automated Generation of Code Compliance Checkers, Y Prasanth, Apr 2001
42. Code generators for GNU Compilers from Sim-NML, Sourav Bhattacharya, July 2001
43. Analysis and Optimization of Adaptive Irregular Problems, Ashutosh Vyas, Nov 2001
44. Efficient code generation on an SMP cluster, Vaibhav Krishna, April 2003
45. Recovery of CFG from Programs, Shiladitya Biswas, May 2003
46. Temporal Profile based Code Layout OPtimizations, Ankur Arora, Jul 2004
47. Loop Optimizations, Dhanunjaya Naidu Yandrapu, Nov 2004
48. Workflow Editors for Composing Applications on Grids, Arati Kadav, May 2005
49. Code generation for Irregular Data Distribution Programs, Anshu Jain, Jun 2005
50. Debuggers for Distributed environments, Pratik Mehta, Jul 2005
51. Modeling and Verifying Workflows for Computational Grids, Sumit Sorde, Jul 2006
52. An Interactive Debugger for Message Passing Parallel Programs, R Kaushik, Jul 2006
53. An Ontology based Service Discovery System for Workflow Composition, Vivek Mishra, Jun 2007
54. A Tools for Parallelizing Programs for Multi-core architectures, Renjith Varma, Jul 2007
55. Design and Implementation of a SET Language, Anurag Saxena, Jul 2007
56. Slicing OpenMP Programs, Avik Paul, Jul 2007
57. Hierarchical Dynamic Scheduler for Grid Workflow Applications, Nitin Gorde, May 2008
58. Energy Aware Scheduling on Grid Environment with Static Performance Prediction, Kamal Sharma, May 2008
59. Code Generation using Parallel Patterns, Rishabh Uppal, May 2008
60. Tool Assisted Modification of Features in Software, Pooja Dixit, June 2008
61. Compiling Irregular Accesses for the Cell Broadband Engine, Pramod Bhatotia, June 2008
62. Generating Code Compliance Checkers from Coding Specifications, Praveen Yedlapalli, June 2008

63. Compiler for languages for Programmable Logic Controllers, Hitendra Singh, July 2008
64. Improving Speculative Loop Parallelization via Slective Squash and Speculation Reuse, Santosh Sharma, May 2009
65. Configurable Static Code Analysis Tool: CodeChecker, Makarand Gawade, May 2009 (won Pankaj Jalote Award for the best Software)
66. Speeding Up Scilab Code, Darshana Wagh, May 2009
67. Towards a Parallel Program Development Environment Based on Parallel Patterns, Nitin Agarwal, May 2009
68. A Workbench for Code Optimization, Sachin B Khot, June 2009
69. Towards Automatic Speculative Parallelization on the Cell Broadband Engine, Kshitiz Garg, June 2009
70. Vishwesh Inamdar, Workbench, In Progress
71. M Deepak, Speculative Parallelism, In Progress
72. Abhishek B Gupta, Parallel Patterns, In Progress
73. Ankur Deshwal, GPU Processors, In Progress
74. Deepti Vidyarthi, Verification and testing, In Progress
75. Sahil Suneja, Parallel I/O, In Progress

BTech Projects Supervised

1. A Tool to perform vectorization, V Purohit and R K Singh, 1991
2. F8X Compiler Front-end, S Kamath and M Moorthy, 1992
3. APL to F8X Convertor, S Nayak and M K Das, 1992
4. A Compiler for VLIW Machine, Ashwin Goel and N Sinha, 1992
5. Generation of Term Rewriting Rules for Compiler backends using Denotational Specifications, A Bajaj and S Giri, 1992
6. A Workbench for Computational Geometry, A Meena and Saibal Das, 1992
7. Fortran 90 Compiler for Convex - 220, V Mohan and V S Anil Kumar, 1993
8. Assembler and dis-assembler for T800, S Pradeep and P Parikh, 1994

9. Graphical representation of SISAL Programs, Rajeev Rai and S Prasad, 1994
10. Re-engineering of Cobol programs, SAS Sastry, 1995
11. A compiler Construction Workbench, M Plakal, 1996
12. Test Data coverage for a Parser, A Chandra, 1997
13. Software cost and performance estimation in CFSM based Hardware and Software Co-design, T V Prasanna Vinay Kumar, 1997
14. Year2000 Problem, A Mishra and P Prakash, 1997
15. Syntax Directed Folding Editor for C++, Anup, 1998
16. Test Coverage Analyzer for C++, Sunil Jain, 1999
17. Parallelizer: A Tool for Parallelizing Sequential Code, Alok Kumar, 1999
18. Debugging Optimized Code, Abhishek Prabhat, 2001
19. Checkpointing Fortran/MPI Programs for Computational Grid, Manav Ratan Mittal and Chaitanya Mishra, 2004
20. Compiler Algorithm Language (CAL): An interpreter and COmpiler, Abhinav Bhatele and Shubham Satyarth, 2005
21. Analysis of Binary Programs, Vikas Kumar, Kapil Kumar, 2005
22. Program Analysis for generating Sandbox Policies, Pankaj Goel, 2005
23. Symbolic Time Complexity of Recursive Procedures, Sagar Jain, 2009 (Won the Best BTP Award)

Industrial Interaction

Industrial Interaction

- Research Scientist and Consultant at Tata Research Design and Development Centre (TRDDC), Pune, June 1986 - May 1990
- Visiting Consultant, Aumtech, NJ, USA, Sumemr, 2000
- Member, Board of Directors, UPDESCO, 2001-2004
- Member, Board of Directors, Jagran.com, 2001-2004

Consultancies

I have been advising/have advised groups at

- C-DAC, Bangalore
- Cadence Design Systems
- Mahindra British Telecom
- Department of Treasuries, MP
- RGPV, Bhopal, MP
- UPFC and UPDESCO, Govt of UP
- IBM Global Services on ACE Programme
- Satyam Computer on Project Mauritius
- **See the Link on Projects** http://www.cse.iitk.ac.in/users/ska/pro/pro.html

Courses delivered to Industry and Faculty of Other Institutes

- Cadence Induction Training Programme, Instructor 1995-1999, Coordinator, 1995-1997
- Course-ware for IBM ACE Programem, Instructor and Coordinator, 1997
- Advanced Training Programme for ACE Instructors, Coordinator, 1998
- Data Flow Analysis and Compilers for Advanced Computer Architectures, for Cadence Design Systems, 1996 and 1998.

- Program Optimization for Multi-core Architectures, Intel 2006, 2007.
- Summer Course on Program Optimization for Multicore Architectures, for faculty from Engneering Institutes, July 2-7, 2007
- Summer Course on Program Optimization for Multicore Architectures, for faculty from Engneering Institutes, Jun 30 - July 5, 2008
- Summer Course on Program Optimization for Multicore Architectures, for faculty from Engneering Institutes, Jun 28 - July 3, 2009

Awards and Honours

Professional Contributions and Recognition

- Outstanding performance award for three consecutive years 1987, 1988, 1989 while at TRDDC Pune.
- Best performance award in course on effective presentation, 1989.
- Chair, Organizing Committee, Seventh Conference on Foundations of Software Technology and Theoretical Computer Science, December 1987.
- Chair, Organizing Committee, Eighth Conference on Foundations of Software Technology and Theoretical Computer Science, December 1988.
- Chair, Organizing Committee, Fourth National Seminar on Theoretical Computer Science, June 1994.
- Member, Organizing Committee, FST and TCS 2002.
- Session chair, Computing Systems, National Systems Conference, 1994.
- Session Chair, Computing Systems, National Systems Conference, 1995.
- Session Chair, Compiler Techniques, NPDPA 2002
- Member, Technical Program Committee, Eighth Conference on Foundations of Software Technology and Theoretical Computer Science, December 1988.
- Member, Technical Program Committee, Ninth Conference on Foundations of Software Technology and Theoretical Computer Science, December 1989.
- Member, International Program Committee, International Parallel and Distributed Programming Symposiumi (IPDPS 2002)
- Member, International Programme Committee, Software Engineering (SE2004-2007)
- Member, International Programme Committee, Parallel and Distributed Computing and Systems (PDCS 2004-2005)
- Member, International Programme Committee, Software Engineering and Applications (SEA 2004-2007)
- Member, International Programme Committee, Advances in Computer Science and Engineering (ACST 2007)
- Member, International Programme Committee, ICDCIT 2005-2006
- Member, International Programme Committee, ASPEC 2006

- Member, International Programme Committee, SRMPDS 2007, 2008
- Member, International Programme Committee, ACM Compute 2008, 2009
- Member, International Programme Committee, HiPC 2009
- Member, ACM India Task Force, ACM India Council
- Finance Chair, ASPEC 2006, RE07, ISEC2008, ISEC2009
- Executive Committee Member and Treasure, SIGSE, CSI
- Programme Committee Chair, ICDCIT 2008
- Member, Board of Directors, UPDESCO, 2001-2004
- Member, Board of Directors, Jagran.com, 2001-2004
- Member, Board of Governors, Indian Institute of Information Technology, Allahabad, 2008-

Membership of Professional Societies

- Computer Society of India
- Association for Computing Machinery and SIG on Programming Languages
- IEEE and its Computer Society