

**Title:** Development of Solution-focused Automatic Parallelization Mechanism with Tools and Techniques

**Abstract:** Automatic parallelization is a promising and an optimistic approach. A few parallelizers do not use all the static information available, while a few others are inadequate in modeling precision. A complete understanding of such tools is vital for both researchers and developers. The primary objective of the work is to evaluate the effectiveness of modern parallelizers viz., Cetus, Par4all, Rose, Intel C Compiler (ICC), and Pluto, their capabilities and limitations. In view of the above, a qualitative and quantitative analysis was carried out on the five frameworks. Two new techniques were introduced to address the shortcomings of Pluto, a polyhedral parallelizer, an open-source tool. The proposed techniques were evaluated on Green-Marl, Rodinia, and Polybench problems and were found to show a considerable speedup in all these benchmarks.

**Speaker's Bio:** Prema Soundrarajan obtained her B.E. degree (Computer Science and Engineering) from Anna University, Chennai, Tamil Nadu. She joined Indira Gandhi Centre for Atomic Research (IGCAR) and pursued her Ph.D. from Homi Bhabha National Institute (HBNI) under the supervision of Dr. B. K. Panigrahi. Her key research area includes Parallel and High-performance computing. She has also carried out a collaborative research work with Prof. Dr. Rupesh Nasre, IIT-Madras. She has submitted her doctoral thesis titled, "Development of Solution-focused Automatic Parallelization Mechanism with Tools and Techniques" to HBNI. She has authored two peer-reviewed publications in international journals, two conference proceedings published in IEEE, and three conference presentations. She has received best poster award in the 9th DAE-VIE symposium held at IGCAR. Her research interests includes automatic parallelization, parallel programming with OpenMP, MPI, and CUDA, performance analysis, compiler analysis, code and loop transformation.