

A REPORT ON
Workshop on PARAM SHAVAK:
Unveiling Parallel Computing

Date: 09th March 2025

Venue: EA-803, E-Block, Silver Oak University

HPC WORKSHOP ON



PARAM SHAVAK

Introduction:

Silver Oak University IEEE Signal Processing Student Branch Chapter hosted "Workshop on PARAM SHAVAK: Unveiling Parallel Computing", as part of IEEE Education Week, in collaboration with ML Geeks Club, an initiative under Silver Oak University IEEE Student Branch. The workshop provided a brief summary of the fundamental principles of High-Performance Computing (HPC) and an introduction to parallel programming, blending theoretical foundations with practical experience. Building on this foundation, the session was specifically designed to empower participants with expertise in parallel computing and hands-on skills, focusing on the latest techniques and tools in HPC and emphasizing practical application.

About the Speaker:

1. **Prof. Monali Suthar**, Research Scholar at Silver Oak University; Assistant Professor at Silver Oak University.
2. **Prof. Gaurav Tiwari**, Assistant Professor at Silver Oak University; Advisor, Silver Oak University IEEE Women in Engineering Student Branch Affinity Group.

About the Session:

Date: 09th April 2025

Time: 02:00 P.M. - 04:00 P.M.

Venue: EA-803, Silver Oak University.

Participants: 63

The workshop began with an interactive discussion on the fundamentals of High-Performance Computing (HPC), providing participants with a clear understanding of its importance in modern computing by Prof. Monali Suthar. She engaged the attendees by asking about their prior knowledge of HPC, setting a collaborative tone. The session then delved into parallel computing essentials, covering concepts such as nodes, CPUs, processes and threading. A detailed explanation was given on threading, showcasing its importance in task allocation as well as execution, establishing a strong foundation for the topics ahead.

The key highlight of session was an in-depth discussion on PARAM SHAVAK system, where participants gained insights into its configuration and compatibility through hands-on demonstration of accessing system information. Prof. Monali Suthar introduced topic of parallel programming models with help of diagrams, concentrating on shared memory model

alongside diving into OpenMP's execution model, applications, flowcharts, commands, syntax, structure and compilation process. She also covered setup of runtime environments and variables, ensuring that participants understood practical aspects of implementing OpenMP in HPC systems.

Further Prof. Gaurav Tiwari took over the session, examining the role of compilers in HPC, with a focus on GCC and using C programs and Turbo C as examples. He covered fundamental HPC operating commands, parallel programming syntax and execution, including for-loops as well as private clauses, providing a thorough understanding of parallel programming concepts. Practical demonstrations, featuring example programs and flowcharts, helped to simplify complex ideas, bridging the gap between theory and real-world application.

The session concluded with an engaging Q&A segment, where students received thoughtful and thought-provoking answers to their queries, satisfying their curiosity and providing clarity on the complex concepts discussed. This interactive discussion helped to address lingering doubts, fostered a deeper understanding of the subject matter, and left attendees with a sense of accomplishment and renewed interest in the field.

Conclusion:

This workshop proved to be highly enriching and illuminating, offering valuable insights into the PARAM SHAVAK system and parallel computing through practical demonstrations and hands-on experience. Attendees learned to interact with HPC systems, execute basic commands, and apply parallel constructs. The session covered the role of compilers in HPC, using examples in C, Turbo C and GCC, equipping students with practical knowledge as well as skills to prepare them for future opportunities in this rapidly evolving field.

This session saw success under the essential guidance and support of Dr. Satvik Khara, Dean, School of Technology, Design and Computer Application; IEEE Senior Member; Chairperson, SIGHT, IEEE Gujarat Section; Chairperson, Technical Activity Committee, Computer Society, IEEE Gujarat Section; Founding Member, Silver Oak University IEEE Student Branch.

Some glimpses of the event:



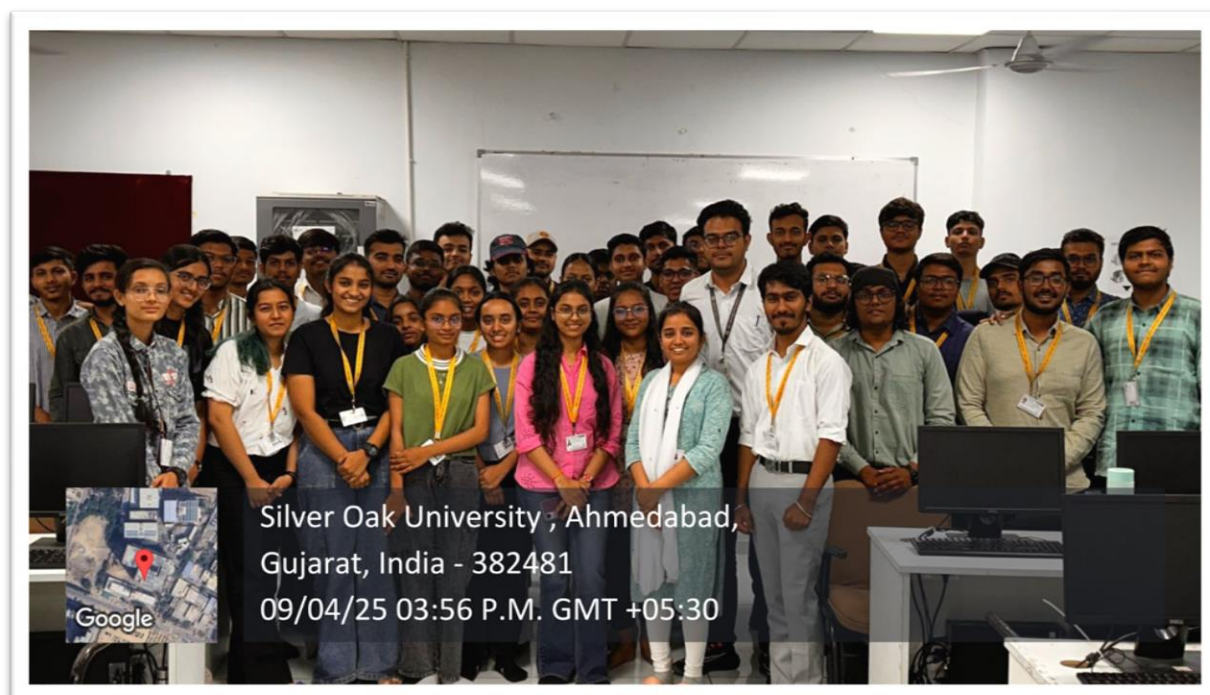
Students understanding parallel computing



Speakers explaining key concepts of GCC



Attendees interacting with the expert to solve their doubts



A group photo to commemorate the session on HPC using PARAM SHAVAK