Nagar Yuwak Shikshan Sanstha's
Yeshwantrao Chavan College of Engineering
(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)
Hingna Road, Wanadongri, Nagpur - 441 110
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Department of Artificial Intelligence & Data Science

Vision of the Department

To be a well-known centre for pursuing computer education through innovative pedagogy, value-based education and industry collaboration.

Mission of the Department

To establish learning ambience for ushering in computer engineering professionals in core and multidisciplinary area by developing Problem-solving skills through emerging technologies.

Session 2025-2026

Vision: Dream of where you want.	**Mission:** Means to achieve Vision

Program Educational Objectives of the program (PEO): (broad statements that describe the professional and career accomplishments)

PEO1	**Preparation**	**P: Preparation**	**Pep-CL abbreviation pronounce as Pep-si-lL easy to recall**
PEO2	**Core Competence**	**E: Environment (Learning Environment)**	
PEO3	**Breadth**	**P: Professionalism**	
PEO4	**Professionalism**	**C: Core Competence**	
PEO5	**Learning Environment**	**L: Breadth (Learning in diverse areas)**	

Program Outcomes (PO): (statements that describe what a student should be able to do and know by the end of a program)

Keywords of POs:
Engineering knowledge, Problem analysis, Design/development of solutions, Conduct Investigations of Complex Problems, Engineering Tool Usage, The Engineer and The World, Ethics, Individual and Collaborative Team work, Communication, Project Management and Finance, Life-Long Learning

PSO Keywords: Cutting edge technologies, Research

"I am an engineer, and I know how to apply engineering knowledge to investigate, analyse and design solutions to complex problems using tools for entire world following all ethics in a collaborative way with proper management skills throughout my life." *to contribute to the development of cutting-edge technologies and Research*.

Integrity: I will adhere to the Laboratory Code of Conduct and ethics in its entirety.

Sanskruti. Paunikar 28/08/2025
Name and Signature of Student and Date
(Signature and Date in Handwritten)

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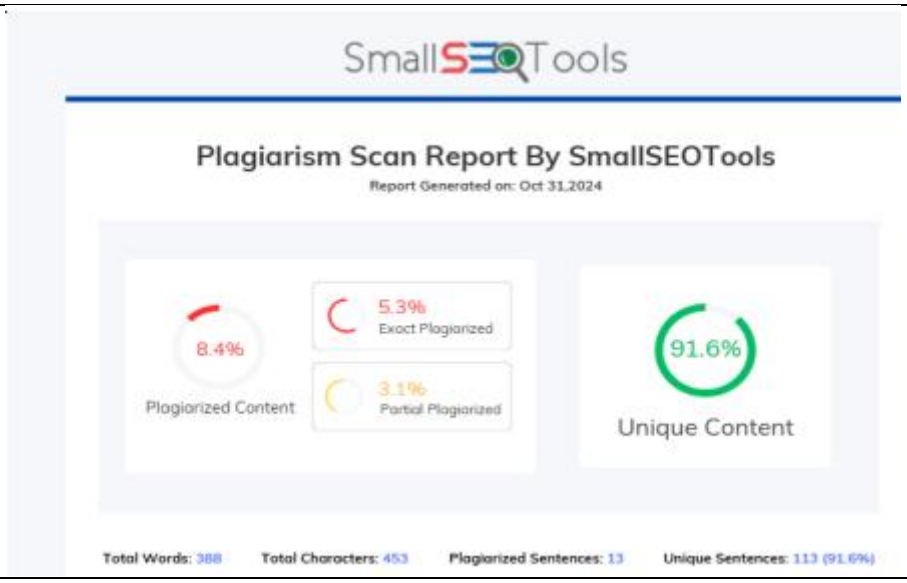
Session	2025-26 (ODD)	**Course Name**	Deep Learning Lab
Semester	7 AIDS	**Course Code**	22ADS702
Roll No	21	**Name of Student**	Sanskruti. Paunikar

Practical Number	3
Course Outcome	**CO1:-**Understand and Apply Parallel Programming Concepts **CO1:-**Analyze and Improve Program Performance. **CO3:-**Demonstrate Practical Skills in HPC Tools and Environments.
Aim	Introduction to OpenMP
Theory (100 words)	OpenMP is an API that provides a standard for writing multi-threaded, shared-memory parallelism in C, C++, and Fortran. It uses compiler programs to instruct the compiler to parallelize specific parts of a program, such as loops. Programmers don't have to manually manage threads; they simply insert the directives, and the OpenMP runtime handles the creation, synchronization, and destruction of threads. The core idea is to make parallel programming accessible, allowing a program to execute a task on multiple processor cores simultaneously, leading to a significant speedup for compute-intensive tasks.
Procedure and Execution (100 Words)	Steps of Implementation:- 1. Creating the Source File: Creating a new C source file named **mpcode1.c** using the touch command. Used vi text editor **vi mpcode1.c** for add code. 2. Attempting to Compile: Compiling the code using **gcc -fopnemp -o mpcode1 mpcode1.c** command. 3. Executing the Parallel Program: Executed the compiled program with the command **./mpcode1.**

	Code:
	
	`[lab1@localhost ~]$ touch mpcode1.c`
	`[lab1@localhost ~]$ vi mpcode1.c`
	`[lab1@localhost ~]$ gcc -fopnemp mpcode1.c -o mpcode1`
	`gcc: error: unrecognized command-line option '-fopnemp'; did you mean '-fopenmp'?`
	`[lab1@localhost ~]$ gcc -fopenmp mpcode1.c -o mpcode1`
	`[lab1@localhost ~]$ ./mpcode1`

	Output:
	`Thread 9: a[9] = 81`
	`Thread 0: a[0] = 0`
	`Thread 2: a[2] = 4`
	`Thread 3: a[3] = 9`
	`Thread 8: a[8] = 64`
	`Thread 6: a[6] = 36`
	`Thread 7: a[7] = 49`
	`Thread 4: a[4] = 16`
	`Thread 1: a[1] = 1`
	`Thread 5: a[5] = 25`
	`[lab1@localhost ~]$`

Output Analysis	The output confirms the program ran successfully in parallel, with multiple threads working on different parts of the array. The non-sequential order of the output (e.g., Thread 8's output appearing first) is a direct result of parallel execution. The unexpected value a[8] = 0 could indicate a bug, but overall, the practical successfully demonstrated OpenMP's ability to divide a task among threads.
Github link	https://github.com/sanskruti-1234/HPC.git
Conclusion	This practical showed how OpenMP enables a program to run in parallel on multiple processor cores. The output confirmed that tasks were successfully divided among threads, demonstrating that OpenMP is a powerful tool for improving performance on multi-core systems.
Plag Report (Similarity index < 12%)	
Date	28/08/2025

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