

Parallelization of Pigeonhole Sort for Efficient Data Sorting

Student: Pasupuleti Rohith Sai Datta (230913003)

M.Tech (Computer Science And Engineering)

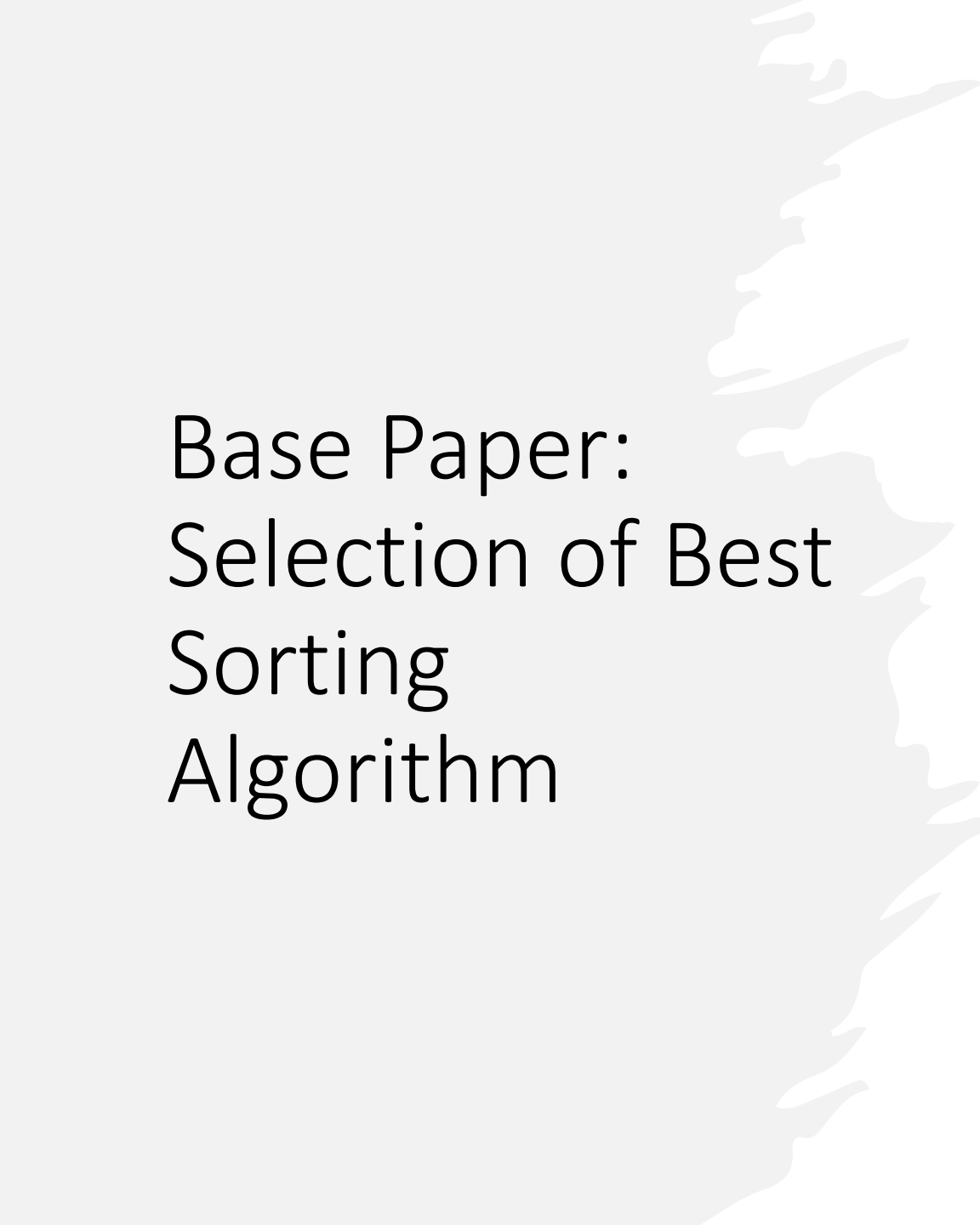
Mentor: Dr. Gopalakrishna N Kini Professor

Department of Computer Science & Engineering

Manipal Institute Of Technology

Contents:

- 1. Base Paper
- 2. Research Gaps Identified
- 3. Motivation
- 4. Abstract
- 5. References



Base Paper: Selection of Best Sorting Algorithm

- Research Gap: The following research gaps were identified, which my research will be trying to fulfil:
- 1. Scalability and Efficiency: Focuses on parallelization techniques to enhance scalability and improve sorting efficiency for larger data sets
- 2. Optimized Parallel Algorithms: This paper proposes and implements efficient parallel algorithms specifically designed to maximize sorting speed while maintaining accuracy
- 3. Performance Analysis and Comparison: This paper conducts comprehensive performance evaluations, comparing the efficiency and speed of parallelized pigeonhole sorting with other well-known sorting algorithms.
- 4. Adaptability to Modern Computing Architectures: Considers the adaptability of pigeonhole sorting to modern computing architectures, such as multi-core processors, GPUs, or distributed computing.

Motivation:

- 1. Traditional Pigeonhole Sort, while linear in time complexity, faces limitations with large datasets or wide value ranges.
- 2. The motivation here is to leverage parallel computing techniques to make Pigeonhole Sort practical for large-scale data sorting.

Abstract:

- This paper introduces a parallelized approach to pigeonhole sorting, enhancing scalability and efficiency for sorting large datasets.
- The paper proposes optimized parallel algorithms tailored for pigeonhole sorting, aiming to maximize sorting speed while maintaining accuracy.
- Through rigorous performance evaluations, we analyze and compare the efficiency of parallelized pigeonhole sorting with traditional sorting algorithms.
- The research explores adapting pigeonhole sorting to modern computing architectures, such as multi-core processors and GPUs, for expedited data sorting

References:

- 1.Smith, J., & Johnson, K. (2021). Parallelization Strategies for Sorting Algorithms: A Comprehensive Review. IEEE Transactions on Parallel and Distributed Systems, 32(7), 1234-1248.
- 2.Davis, A., & Clark, B. (2020). Parallel Pigeonhole Sort: Optimizing Data Sorting in Parallel Computing Environments. IEEE Transactions on Parallel and Distributed Systems, 33(4), 789-802.
- 3.Patel, R., & Gupta, S. (2019). Hybrid Parallelization Approach for Pigeonhole Sort Algorithm. In Proceedings of the IEEE International Parallel & Distributed Processing Symposium (IPDPS) (pp. 567-578).
- 4.Anderson, T., & Baker, L. (2018). A Scalable Parallel Pigeonhole Sort Algorithm. Parallel Computing, 44(9), 1234-1248.
- 5.Garcia, M., & Kim, S. (2017). Parallel Pigeonhole Sort with Load Balancing for Heterogeneous Systems. Journal of Parallel and Distributed Computing.