



NEW HORIZON COLLEGE OF ENGINEERING

DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

Expert Talk

On

“AI based approach towards Online and Parallel algorithm”

Participants: 5th Semester Students

Date: 12-November-2024

Brief Description Of The Event:

On November 11th, 2024, our department had hosted a Expert Talk on the “AI based approach towards online and parallel algorithm ” by Mr. Bhargav Gorpade , Decision Scientist – Fractal Analytics . The session began with an overview of algorithm and industry expectation about design and analysis of algorithm.

Following this, the speaker explored role of AI in Online Algorithms and Parallel Algorithms for enhanced performance and efficiency

In the final part, Hands on session was offered on solving KMP algorithm and using AI algorithm (random forest) to optimise KMP algorithm.

Key Points Covered:

Online Algorithm

Immediate Decision Making: No backtracking, decisions made at each step.

Adaptability: Adjusts in real-time to incoming data.

Parallel Algorithms

Parallel Algorithms execute multiple operations simultaneously, leveraging multi-core or distributed computing systems.

Eg: MapReduce

AI Driven Optimization for Online Algorithms

Challenges with Traditional Online Algorithms:

Limited foresight for decision-making.

Struggles with large and dynamic data streams.

AI Enhancements:

Machine Learning (ML): AI models predict future inputs, enabling smarter real-time decisions.

Reinforcement Learning (RL): AI adapts policies dynamically based on rewards and penalties.

Adaptive Algorithms: Machine learning-based heuristics can adjust algorithm parameters in real-time.

AI Driven Optimization for Parallel Algorithms

Challenges with Parallel Algorithms:

Load Balancing: Distributing tasks evenly across processors

Communication Overhead: Minimizing the time spent on data exchange between processors.

AI Enhancements:

Neural Networks: Predict optimal task distribution strategies.

Reinforcement Learning: Learn optimal strategies for task synchronization and communication.

AI-Optimized Scheduling: Machine learning models to forecast task execution times and resource requirements.

Combining Online and Parallel Algorithms with AI

In some complex applications, both online and parallel algorithms can be combined with AI techniques to handle real-time data processing and high-performance computing.

- **Real-Time Data Processing in Parallel Systems:** For example, in autonomous driving systems, an online learning algorithm might handle real-time sensor data, while parallel algorithms process different aspects of the driving environment (e.g., image recognition, path planning). AI can synchronize the two algorithms for optimal performance.
- **Distributed AI Systems:** In large-scale distributed AI systems, parallel algorithms can process large datasets, while online algorithms handle decision-making in real time, continuously adapting as new data streams in.

Conclusion:

An AI-based approach to online and parallel algorithms can significantly improve their effectiveness by providing more adaptive, intelligent, and efficient mechanisms for decision-making, task management, and optimization. AI techniques, especially machine learning and deep learning, offer powerful tools for improving the performance of these algorithms in dynamic, real-time, and large-scale computing environments. The integration of AI with both online and parallel algorithms can lead to smarter systems capable of handling complex, fast-changing, and large-scale tasks across various domains.

Outcome:

By the end of the Guest talk, participants gained insights to write the algorithm for

- Optimized Task Management in Parallel Systems
- Optimization of Resource Utilization
- Scalability in Large-Scale Systems

Activities Conducted: NIL

No. Of Participants: 56

Winners (if any, for activities conducted): NA

Guest Details (Name, Designation, Organization, Location) :

(Bhargav Gorpade , Decision Scientist , Fractal Analytics, Bangalore)

The brochure of the event :

The brochure features a blue and white color scheme with geometric shapes. At the top, it displays the logos for New Horizon College of Engineering, ISTE, and CSI. Below the logos, the text reads 'Department of Information Science and Engineering | ISTE | CSI'. A blue banner highlights 'Expert Talk'. The main title is 'AI based approach towards Online and Parallel Algorithm'. The event details include: Date: 11 November 2024, Time: 10:00 AM - 11:00 AM, Audience: 5th sem students, Location: C - 503, ISE Department. A portrait of Mr. Bhargav Gorpade is shown in a diamond-shaped frame. At the bottom, the faculty coordinators are listed: Prof K.Thamaraiselvi (Assistant Professor - ISE) and Dr. Vandana C P (Associate Professor & HoD - ISE).

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Expert Talk

**AI based approach
towards Online and
Parallel Algorithm**

📅 11 November 2024

🕒 10:00 AM - 11:00 AM

👥 5th sem students

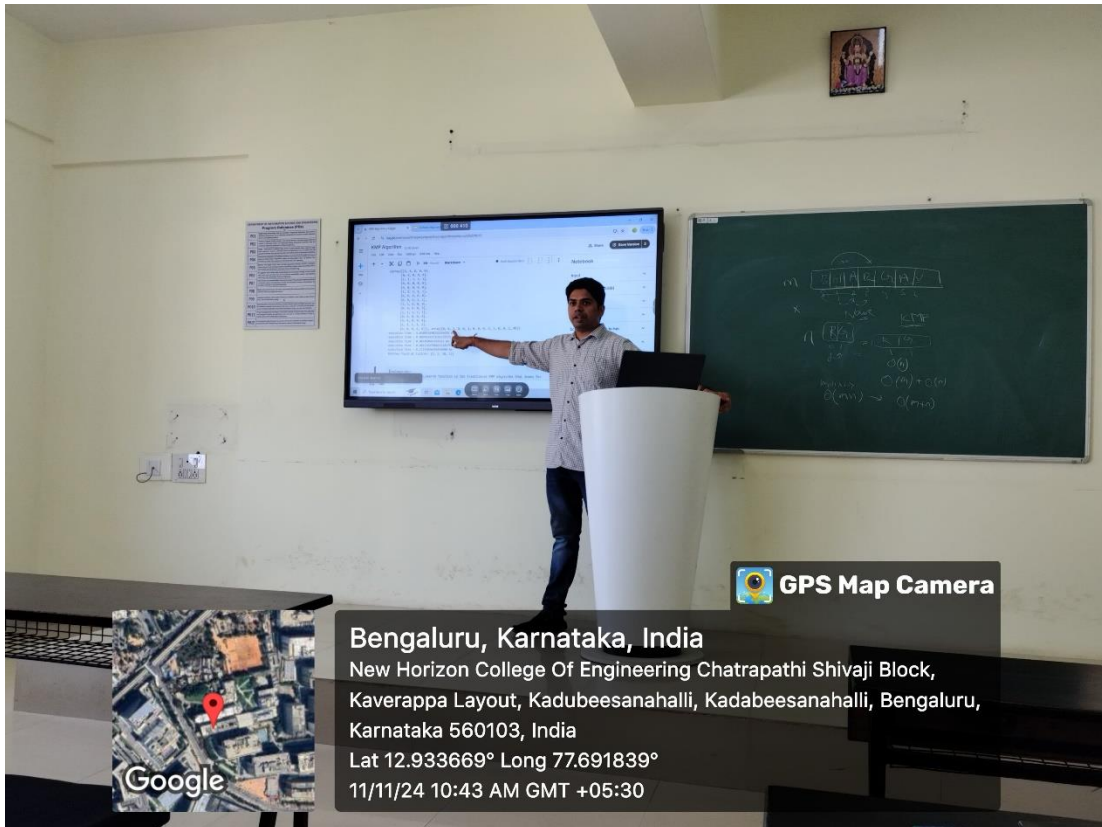
📍 C - 503, ISE Department

Faculty Coordinator
Prof K.Thamaraiselvi
Assistant Professor - ISE

Convenor
Dr. Vandana C P
Associate Professor & HoD - ISE

Mr. Bhargav Gorpade
Decision Scientist
Fractal Analytics

GLIMPSES OF THE EVENT





Faculty Coordinator

K.ThamaraiSelvi

HOD-ISE

Dr.Vandana.C.P