RAMCO INSTITUTE OF TECHNOLOGY

RAJAPALAYAM

Department of Artificial Intelligence and Data Science

Academic Year: 2024- 2025 (Odd Semester)

Active Learning Best practices: Peer Teaching- Cooperative Learning Technique

Degree, Semester & Branch: III Sem. B.Tech. Artificial Intelligence and Data Science

Course Code & Title: - AL3391 & Artificial Intelligence

Name of the Faculty member: Ms.K.Amuthachenthiru/Assistant Professor-AI & DS

Theme of discussion: Local Search in Continuous Space

Topics Covered: Unit II

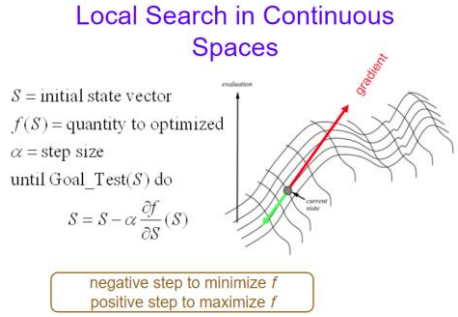
Date and Time: 31.08.2024 & 10.50 A.M to 11.35 A.M

Course Outcome: CO2

- **Topic Learning Outcome: TLO4**
- **Activity Chosen: Peer Teaching**

Active Learning Best practices: Peer Teaching

Topic: Local Search in Continuous Space



Learning Outcomes

Critical Thinking: Students will develop their critical thinking skills by analyzing and interpreting optimization algorithms in continuous spaces, identifying patterns in search strategies, and understanding their applications in real-world scenarios.

Problem-Solving: Students will engage in hands-on activities that require them to apply knowledge of local search techniques to solve complex optimization problems in continuous domains.**Procedure:**

Introduction (5 minutes)

- Purpose: Explain the goal of the session: to understand local search techniques in continuous spaces and engage in a peer-teaching activity.
- Instructions: Provide a brief introduction to the concept of local search algorithms in continuous spaces (e.g., Gradient Descent, Simulated Annealing). Highlight the importance of optimization problems where the search space is continuous.
- Setup: Ensure that all participants have access to their learning materials (digital resources, textbooks, or internet access).

Teaching Preparation Phase (10 minutes)

- Preparation: Divide the class into small groups and assign each group a specific local search technique (e.g., Hill Climbing, Simulated Annealing, Gradient Descent, Evolutionary Algorithms).
- Research: Encourage students to explore resources related to their assigned topic and prepare a 5-minute teaching segment.
- Guidelines: Ask students to focus on the core principles, use cases, and challenges of the technique they are preparing to teach.

Peer Teaching Phase (20 minutes)

- Presentation: Each group will take turns presenting their assigned local search technique to the class. They should cover:
    - How the search technique works in continuous spaces.
    - Advantages and limitations of the technique.
    - Examples of real-world applications.
- Interactive Learning: After each presentation, open the floor for questions, encouraging active engagement and clarification.

Group Discussion and Comparison (10 minutes)

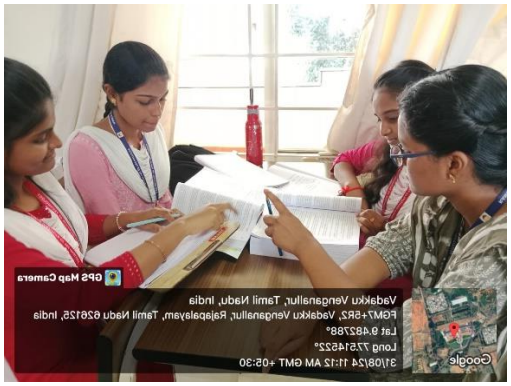
- Discussion: Facilitate a group discussion comparing the different local search techniques presented.
- Interaction: Ask students to reflect on the pros and cons of each technique and which might be best suited for different types of optimization problems. Encourage students to make connections between the techniques and real-world applications, like machine learning or robotics.

Wrap-Up and Reflection (5 minutes)

- Summary: Recap the key concepts covered in the session, emphasizing the variety of local search techniques available for continuous spaces.
- Reflection: Invite students to share what they found most interesting or challenging about the peer-teaching activity. Ask them to reflect on how the local search techniques might be used in their future projects or studies.

  Closure (Optional, 5 minutes)
- Conclusion: Conclude by thanking the students for their participation and summarizing the importance of understanding local search techniques for solving optimization problems in continuous spaces.
- Group Reflection: Ask each group to share one insight they gained from another group's presentation.

Glimpses:



Reflective Report

Challenges and Strategies:

- One of the challenges in this activity is ensuring that students understand the mathematical concepts behind continuous space algorithms.
- To overcome this, encourage the use of visual aids (graphs, animations) and simple examples to explain complex algorithms like Gradient Descent or Simulated Annealing.

Observations:

- Peer teaching is a powerful method to reinforce learning. It allows students to deepen their understanding by teaching others. Local search in continuous spaces can be abstract, but through peer interaction, the concepts become more relatable and understandable.
- The use of peer teaching encourages active learning and helps students develop communication skills, as they must explain complex ideas in a clear and concise manner.

Student Response:

- Engaged Students: Bright students actively participated by explaining difficult concepts like partial derivatives in Gradient Descent or the cooling schedule in Simulated Annealing.
- Assisted Learners: Slow learners benefitted from one-on-one explanations during group discussions, improving their comprehension.
- Overall Enjoyment: Most students enjoyed the peer teaching experience, finding it helpful for mastering challenging concepts in local search and continuous space optimization.

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FEEDBACK

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Feedback collected in class and also through online

Gform Link :

Feedback Questions:

1. Did the active learning method used in the session engage your interest in the topic? **Yes** **No**

2. How did the active learning method enhance your understanding of the topic?

Excellent **Good** **Satisfactory**

3. Did the active learning method encourage active participation and communication?

Yes **No**

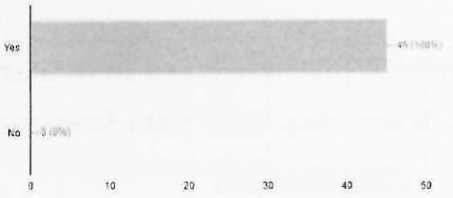
4. Did the active learning method prompt you to think more deeply or critically about the topic?

Yes **No**

Feedback Analysis:

Did the active learning method used in the session engage your interest in the topic? Copy

0 / 45 correct responses



How did the active learning method enhance your understanding of the topic? Copy

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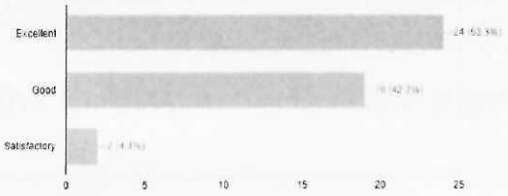

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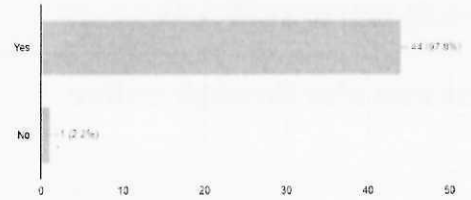

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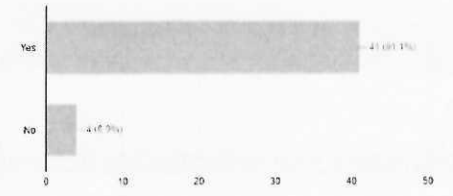

12/9/24

HOD/AD