Research Proposal: Meta Learning in an Adaptive Simulated Environment with Transfer Learning

Overview:

This research aims to explore the integration of meta learning within an adaptive simulated environment, enhanced by transfer learning techniques. The objective is to develop a robust model capable of learning and adapting to various levels of difficulty within the simulated environment, ultimately improving the efficiency and effectiveness of the learning process.

Simulated Environment:

* Game env
* Platforming

Week 1: Fleshing Out the Problem Idea for Research

* Identify the core problem and objectives of the research.
* Define the scope and significance of the study.
* Establish initial hypotheses and research questions.

Week 2: Final Revisions for Research Proposal and Brushing up on Deep Learning

* Refine the research proposal based on feedback.
* Review key concepts in deep learning, including neural networks, backpropagation, and optimization techniques.
* Ensure a solid understanding of recent advancements and current trends in deep learning.

Week 3: Literature Reviews and Brushing Up on Deep Learning

* Conduct an extensive literature review on deep learning.
* Identify relevant papers, models, and methodologies.
* Summarize findings and identify gaps in current research.

Week 4: Literature Reviews and Brushing Up on Meta Learning

* Review key concepts and recent advancements in meta learning.
* Identify and analyze significant studies and methodologies.
* Understand different approaches to meta learning and their applications.

Week 5: Literature Reviews and Brushing Up on Meta Learning

* Continue the literature review on meta learning.
* Summarize key findings and identify potential methodologies for the research.
* Focus on understanding the challenges and limitations of existing meta learning approaches.

Week 6: Literature Reviews and Brushing Up on Transfer Learning

* Review the fundamental concepts and recent advancements in transfer learning.
* Identify relevant studies and methodologies.
* Summarize findings and understand how transfer learning can be applied to adaptive environments.
* Begin writing the survey of literature.
* Start coding preliminary models based on insights from the literature review.

Week 7: Creating a Simulated Environment

* Design and develop a simulated environment for training models.
* Ensure the environment can be easily modified to introduce different levels of difficulty.
* Test the initial setup to ensure functionality.

Week 8: Build on Simulated Environment and Make it Adaptable by Difficulty

* Enhance the simulated environment to adapt to varying levels of difficulty.
* Implement mechanisms to dynamically adjust the environment based on model performance.
* Validate the adaptability of the environment through initial tests.

Week 9: Start Training on Adaptive Environment, Find Preliminary Results

* Begin training models in the adaptive environment.
* Monitor performance and collect preliminary results.
* Analyze initial data to identify trends and areas for improvement.

Week 10: Showcase Trained Model and Results from Preliminary Training

* Present the trained model and preliminary results.
* Identify strengths and weaknesses of the initial approach.
* Incorporate feedback and refine the model.
* Begin coding transfer learning mechanisms for the adaptive environment.

Week 11: Deploy and Train Transfer Learning Model

* Implement transfer learning techniques into the adaptive environment.
* Deploy the transfer learning model and begin training.
* Monitor performance and adjust parameters as necessary.

Week 12: Test Different Scenarios and Run Them

* Design and implement various scenarios to test the transfer learning model.
* Run simulations and collect data on model performance across different scenarios.
* Analyze results to assess the effectiveness of transfer learning in the adaptive environment.

Week 13: Run Full Model and Find Final Results

* Conduct comprehensive tests with the fully developed model.
* Collect and analyze final results.
* Identify key findings and potential areas for future research.

Week 14: Write Paper

* Begin drafting the research paper.
* Structure the paper to include introduction, methodology, results, discussion, and conclusion sections.
* Incorporate all findings and analyses from the research.

Week 15: Review Paper

* Conduct thorough reviews and revisions of the research paper.
* Seek feedback from peers and advisors.
* Finalize the paper for submission.

Week 16: Present Final Research and Discuss Journal Publications

* Present the final research findings to peers and advisors.
* Discuss potential journals for publication.
* Prepare and submit the paper to selected journals.