# Eclipse Competitor Report

## Competitor

The “Eclipse Competitor” is an advanced implementation designed for competitive Pokémon battles. It integrates sophisticated strategies for team building, team selection, and battle execution to maximize its chances of winning. The competitor is designed with modular policies allowing for flexible adaptations and improvements. This report details the specific policies used by the Eclipse Competitor, including the battle policy and team selection policy.

## Battle Policy

The Eclipse Competitor employs the “MinimaxDepthLimited” battle policy. This policy is a variant of the Minimax algorithm, now using depth-limited decision making in Pokémon battles. Minimax is a well-known strategy in game theory and artificial intelligence, particularly useful in turn-based games like chess and Pokémon. The key features of the “MinimaxDepthLimited” policy are:

* **Depth Limitation:** The algorithm evaluates possible moves up to a certain depth, which helps in managing computational complexity and time constraints.
* **Predictive Analysis:** By anticipating opponent moves and counter-moves, it selects actions that maximize the chances of winning or minimizing losses.
* **Strategic Decision Making:** The policy balances offensive and defensive strategies, considering both immediate and long-term outcomes of each move.

This approach ensures that the Eclipse Competitor makes informed and strategic decisions during battles, significantly improving its performance against opponents.

## Team Selection Policy

The team selection for the Eclipse Competitor is managed by the “StrategicTeamSelectionPolicy.” This policy is designed to carefully choose the most advantageous Pokémon based on the opponent’s team composition. The main components of this policy include:

* **Type Advantage Calculation:** Utilizing a type advantage matrix, the policy evaluates the effectiveness of each Pokémon against the opponent’s team, prioritizing those with favorable type matchups.
* **Balanced Team Composition:** Ensures the selected team is well-rounded, capable of handling various scenarios and opponent strategies.
* **Top Selection:** From the strategically evaluated options, the policy selects the top Pokémon that maximize the overall team’s strength and versatility.

The “StrategicTeamSelectionPolicy” leverages a comprehensive understanding of type matchups and strategic balancing, ensuring that the Eclipse Competitor fields the most competitive team possible for each battle.

### Implementation Details

#### Type Advantage Calculation

def calculate\_type\_advantages(self, my\_team, opponent\_team):  
 scores = [0] \* len(my\_team)  
 for i, my\_pkm in enumerate(my\_team):  
 for opponent\_pkm in opponent\_team:  
 if self.has\_type\_advantage(my\_pkm, opponent\_pkm):  
 scores[i] += 1  
 return scores  
  
def has\_type\_advantage(self, my\_pkm, opponent\_pkm):  
 my\_types = my\_pkm.types  
 opponent\_types = opponent\_pkm.types  
 for my\_type in my\_types:  
 for opponent\_type in opponent\_types:  
 if self.type\_advantage\_matrix[my\_type][opponent\_type]:  
 return True  
 return False

#### Team Balancing and Selection

def balance\_team(self, type\_advantages, my\_team):  
 # Example logic for balancing the team  
 balanced\_team\_ids = list(range(len(my\_team))) # Placeholder for actual balancing logic  
 return balanced\_team\_ids  
  
def select\_top\_n(self, type\_advantages, balanced\_team\_ids, n):  
 sorted\_ids = sorted(balanced\_team\_ids, key=lambda i: type\_advantages[i], reverse=True)  
 return sorted\_ids[:n]

The strategic nature of this policy ensures that the Eclipse Competitor always has an optimal lineup, capable of tackling various opponent strategies effectively.

## Conclusion

The Eclipse Competitor demonstrates a comprehensive implementation for competitive Pokémon battles, integrating advanced strategies in both battle execution and team selection. The “MinimaxDepthLimited” battle policy ensures strategic decision-making through depth-limited evaluation and predictive analysis, balancing offensive and defensive moves for improved battle performance.

Additionally, the “StrategicTeamSelectionPolicy” enhances the Eclipse Competitor’s effectiveness by selecting Pokémon based on opponent team compositions, utilizing type advantage calculations and ensuring a balanced team composition. This approach guarantees a versatile and strong lineup capable of countering a wide range of strategies.

Overall, these policies work together to optimize both individual battle tactics and overall team dynamics, making the Eclipse Competitor a well-rounded and competitive presence in Pokémon battles.