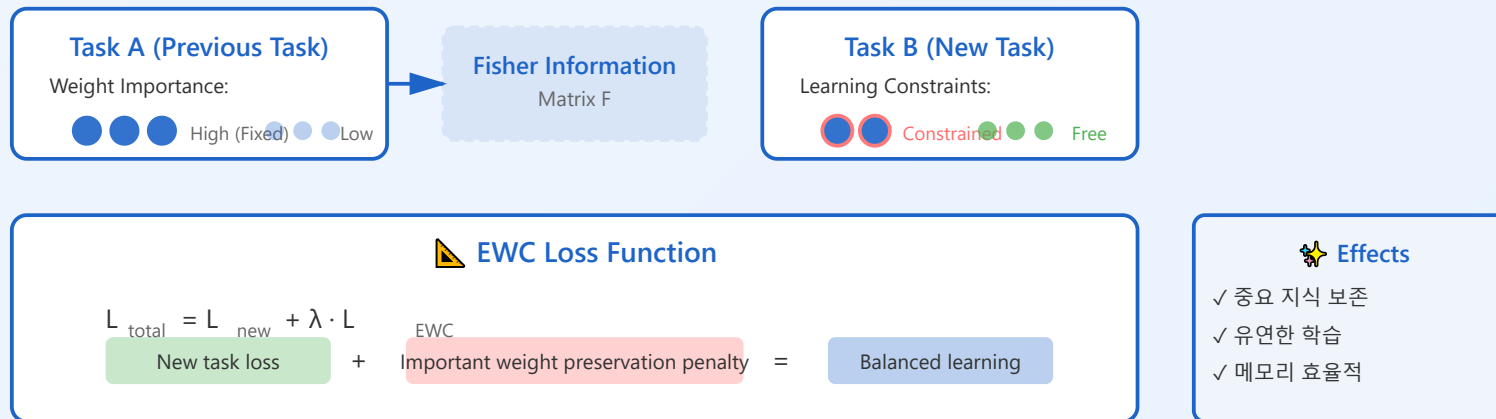


Elastic Weight Consolidation (EWC)



EWC Weight Importance Mechanism



EWC Mechanism

- Fisher Information Matrix: Identify important weights
- Weight importance calculation: Identify parameters important to previous tasks
- Add constraints: Limit important weight changes
- Maintain flexibility: Freely update less important weights



Loss Function

- $L_{\text{total}} = L_{\text{new}} + \lambda * L_{\text{EWC}}$
- $L_{\text{EWC}} = \sum F_i * (\theta_i - \theta^*_i)^2$
- F_i : Fisher information (weight importance)
- λ : Regularization strength (typically 1-1000)



Penalty Application

- High penalty for important weight changes
- Freely learn less important weights
- Cumulative penalty across multiple tasks
- Memory efficient: Store only Fisher matrix