Lottery Ticket Hypothesis

Lottery Ticket Hypothesis

A large network contains small subnetworks ("winning tickets")
that can achieve good performance when trained from scratch

Large Network
1000 neurons

⊃
contains

Winning Ticket
100-200 neurons

≈
same accuracy

🏆

Finding the Winning Ticket

✓ **① Random Init** — Initialize the network randomly

↓

≡ **② Train** — Train the entire network

↓

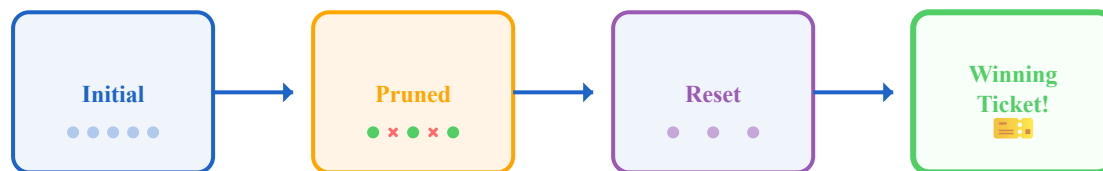✕ **③ Prune** — Remove unimportant weights

↓

⭐ **④ Reset** Rewind to original initialization

↓

⭐ **⑤ Retrain** Train only the subnetwork (Winning Ticket!)

Network Evolution

Initial → **Pruned** → **Reset** → **Winning Ticket!** 🎫

Key Findings

🎯 Can achieve original performance with only 10-20% of weights

⚡ Training speed is also faster

🔑 Initialization method is crucial