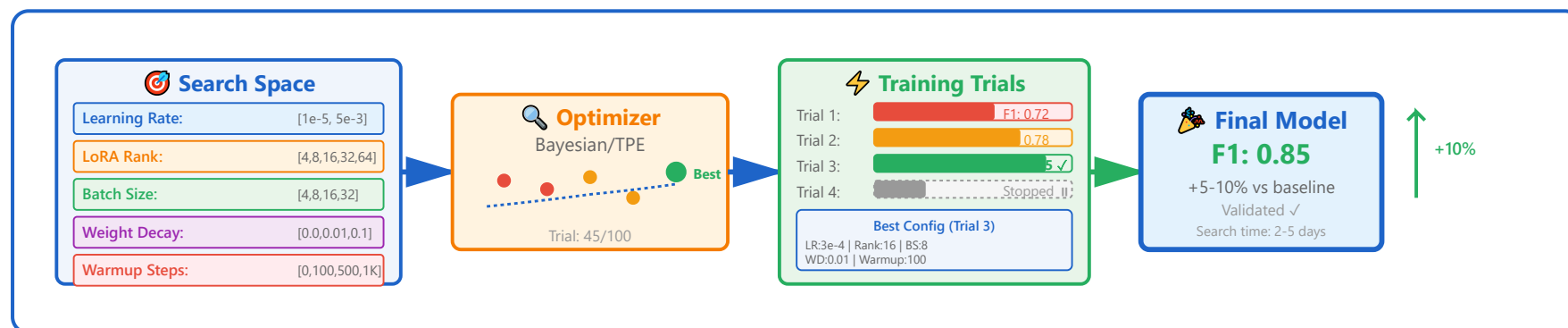


## Hyperparameter Optimization

### Automated Hyperparameter Search

Find optimal configurations for medical tasks



**50-100**

Trials

**5-10%**

Performance Gain

**2-5 days**

Search Time

### 🔧 Optimization Tools

- **Optuna:** Tree-structured Parzen estimator (TPE)
- **Ray Tune:** Distributed hyperparameter tuning
- **Weights & Biases Sweeps:** Bayesian optimization
- **Hyperopt:** Random search and TPE



## Search Strategies

- **Random Search:** 20-50 trials, good baseline
- **Bayesian Optimization:** 50-100 trials, efficient
- **Population-Based:** Evolve configurations
- **Early Stopping:** Terminate poor trials