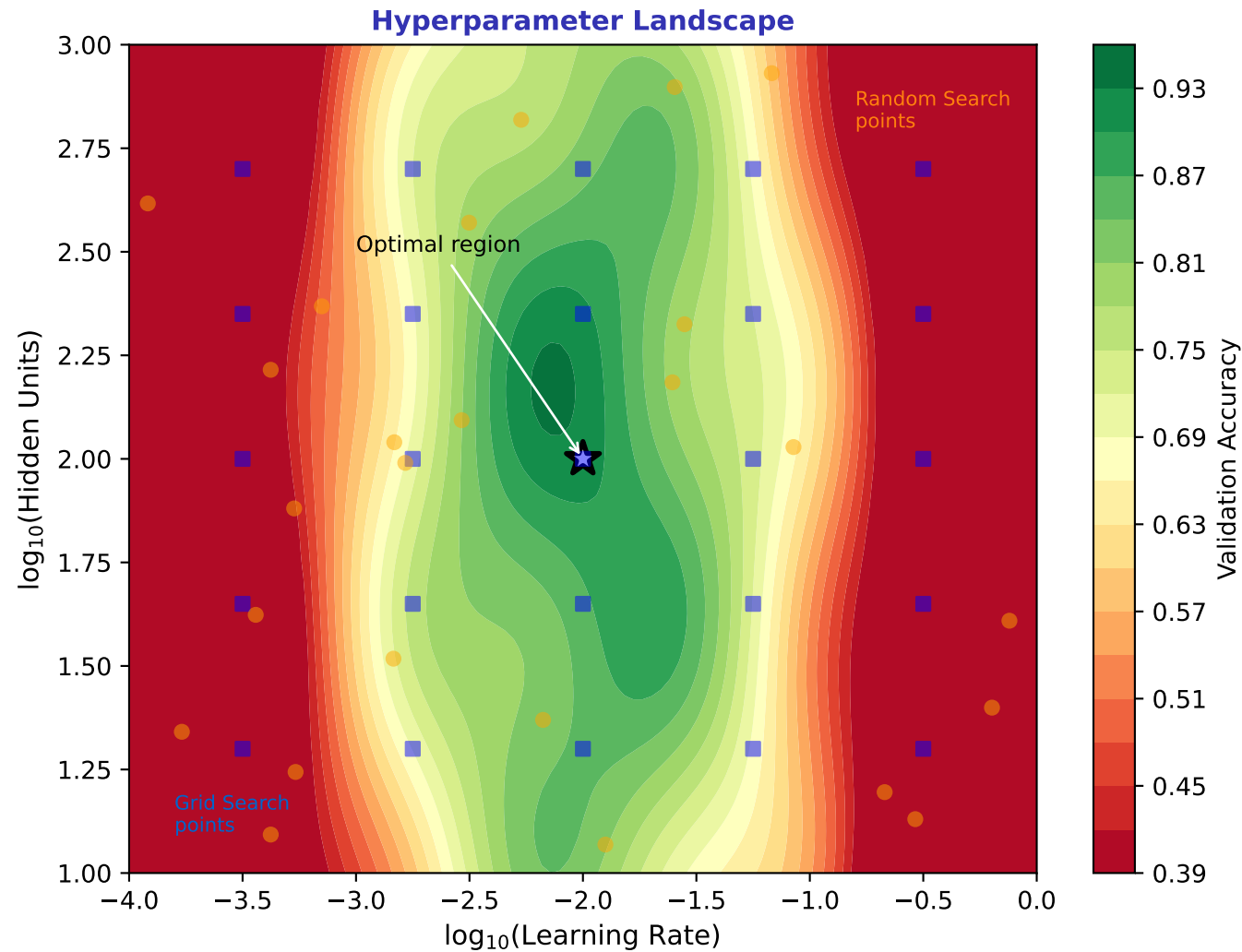


# Hyperparameter Optimization: Finding the Best Configuration



## Hyperparameter Search Methods

### Grid Search

- Exhaustive search over grid
- Exponentially expensive
- May miss optimal region

### Random Search

- Sample randomly from ranges
- Often better than grid
- More efficient exploration

### Bayesian Optimization

- Uses prior results
- Smart exploration
- Best for expensive evaluations

Key Hyperparameters to Tune:

- Learning rate:  $1e-4$  to  $1e-1$
- Hidden layer size: 32 to 1024
- Number of layers: 1 to 5
- Batch size: 16 to 256
- Regularization strength:  $1e-5$  to  $1e-1$
- Dropout rate: 0.1 to 0.5