Practical Methodology: Overview

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Topics

1. Performance Metrics
2. Default Baseline Models
3. Determining whether to gather more data
4. Selecting hyperparamaters
5. Debugging strategies
6. Example: multi-digit number recognition

What a ML practitioner needs to know

- Need more than knowledge of what algorithms exist and principles that explain how they work. Need to know:
  - How to choose algorithm for given application
  - How to monitor/respond to experimental results
  - Whether to gather more data
  - Increase/decrease model capacity
  - Add/remove regularizing features
  - Improve optimization or improve inference
  - Debug software implementation

Recommended design process

- Determine goals
  - Error metrics and target value for error metric
    - Driven by problem application intended to solve
- Establish working end-to-end pipeline
  - As soon as possible, including metrics
- Determine bottlenecks in performance
  - Is poor performance due to under/overfitting, defect is in software or data
- Make incremental changes
  - New data, adjust hyperparameters/algorithms