
Structuring Machine Learning Projects

deeplearning.ai

About this Course

You will learn how to build a successful machine learning project. If you aspire to be a technical leader in AI, and know how to set direction for your team's work, this course will show you how.

Much of this content has never been taught elsewhere, and is drawn from my experience building and shipping many deep learning products. This course also has two "flight simulators" that let you practice decision-making as a machine learning project leader. This provides "industry experience" that you might otherwise get only after years of ML work experience.

After 2 weeks, you will:

- Understand how to diagnose errors in a machine learning system, and
- Be able to prioritize the most promising directions for reducing error
- Understand complex ML settings, such as mismatched training/test sets, and comparing to and/or surpassing human-level performance
- Know how to apply end-to-end learning, transfer learning, and multi-task learning

I've seen teams waste months or years through not understanding the principles taught in this course. I hope this two week course will save you months of time.

This is a standalone course, and you can take this so long as you have basic machine learning knowledge. This is the third course in the Deep Learning Specialization.

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Taught by: Andrew Ng, Co-founder, Coursera; Adjunct Professor, Stanford University; formerly head of Baidu AI Group/Google Brain



Taught by: Head Teaching Assistant - Kian Katanforoosh, Adjunct Lecturer at Stanford University, deeplearning.ai, Ecole Centrale Paris




Taught by: Teaching Assistant - Younes Bensouda Mourri, Mathematical & Computational Sciences, Stanford University, deeplearning.ai

Basic Info	Course 3 of 5 in the Deep Learning Specialization
Level	Beginner
Commitment	2 weeks of study, 3-4 hours/week
Language	English, Subtitles: Chinese (Traditional), Chinese (Simplified) Volunteer to translate subtitles for this course
Hardware Req	None currently, unless you'd like to download Jupyter Notebooks locally for offline work.
How To Pass	Pass all graded assignments to complete the course.
User Ratings	★★★★☆ 4.8 stars

Syllabus


WEEK 1

ML Strategy (1)

 13 videos, 1 reading

1. **Video:** Why ML Strategy
2. **Video:** Orthogonalization
3. **Video:** Single number evaluation metric
4. **Video:** Satisficing and Optimizing metric
5. **Video:** Train/dev/test distributions
6. **Video:** Size of the dev and test sets
7. **Video:** When to change dev/test sets and metrics
8. **Video:** Why human-level performance?
9. **Video:** Avoidable bias
10. **Video:** Understanding human-level performance
11. **Video:** Surpassing human-level performance
12. **Video:** Improving your model performance
13. **Reading:** Machine Learning flight simulator
14. **Video:** Andrej Karpathy interview

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 **Graded:** Bird recognition in the city of Peacetopia (case study)

WEEK 2

ML Strategy (2)

 11 videos

1. **Video:** Carrying out error analysis
2. **Video:** Cleaning up incorrectly labeled data
3. **Video:** Build your first system quickly, then iterate

4. **Video:** Training and testing on different distributions
5. **Video:** Bias and Variance with mismatched data distributions
6. **Video:** Addressing data mismatch
7. **Video:** Transfer learning
8. **Video:** Multi-task learning
9. **Video:** What is end-to-end deep learning?
10. **Video:** Whether to use end-to-end deep learning
11. **Video:** Ruslan Salakhutdinov interview

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Graded: Autonomous driving (case study)

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How It Works

GENERAL

How do I pass the course?

To earn your Course Certificate, you'll need to earn a passing grade on each of the required assignments—these can be quizzes, peer-graded assignments, or programming assignments. Videos, readings, and practice exercises are there to help you prepare for the graded assignments.

What do start dates and end dates mean?

Most courses have sessions that run multiple times a year — each with a specific start and end date. Once you enroll, you'll have access to all videos, readings, quizzes, and programming assignments (if applicable). Peer-graded assignments can only be submitted and reviewed once your session has begun. If you choose to explore the course without purchasing, you may not be able to access certain assignments. If you don't finish all graded assignments before the end of the session, you can enroll in the next session. Your progress will be saved and you'll be able to pick up where you left off when the next session begins.

What are due dates? Is there a penalty for submitting my work after a due date?

Within each session there are suggested due dates to help you manage your schedule and keep coursework from piling up. Quizzes and programming assignments can be submitted late without consequence. However, it is possible that you won't receive a grade if you submit your peer-graded assignment too late because classmates usually review assignment within three days of the assignment deadline.

Can I re-attempt an assignment?

Yes. If you want to improve your grade, you can always try again. If you're re-attempting a peer-graded assignment, re-submit your work as soon as you can to make sure there's enough time for your classmates to review your work. In some cases you may need to wait before re-submitting a programming assignment or quiz. We encourage you to review course material during this delay.

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Course 3 of Specialization

Deep Learning Specialization

Master Deep Learning, and Break into AI



Deep Learning

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[View the course in catalog](#)

Related Courses



Improving Deep Neural Networks:
Hyperparameter tuning, Regularization and
Optimization

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Convolutional Neural Networks

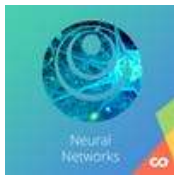


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Sequence Models

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Neural Networks and Deep Learning

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Introduction to Deep Learning

National Research University Higher School of Economics

