

Practical Courses for Applied AI

Dr. Ahmad Al Sallab

Senior Expert

Welcome



- Ahmad EL-SALLAB
- Ph.D. Cairo University, 2010-2014
- M.Sc., Cairo University, 2007-2009
- Publications and research
 - 30+ publications in ML/DL, Speech, Comp Vision, Robotics, NLP
 - Research gate profile: Ahmad A. Al Sallab
- Valeo, 2008-Now
 - S. Expert/S. Chief of AI/DL
- Intel, 2005-2008
- Lecturer (ITI, CUFE, GUC, NTI,...)

Introduce yourself!



Why I am HERE?

Why I am HERE?

To learn!

Work together → **Learn by doing:**

- Projects
- Research

What's NOT unique?

Everything is already available:

- [AI for everyone](#)
- Coursera DL specialization
- Udacity Nano degrees
- [Fast.ai](#)
- [CS231n Stanford CV](#)
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What's NOT unique?

- [Deep Learning with Python](#), Fchollet (Keras)
 - [Notebooks](#)
- [Hands-On Machine Learning with Scikit-Learn and TensorFlow](#)
 - [Notebooks](#)
- [Ian Goodfellow DeepLearning Book](#)

AND Much, much more!

Better content from far better scientists!

Plus

**All the content will be available with
recordings and ALL**

What's unique?

Work together on projects

The main idea is to learn by doing!

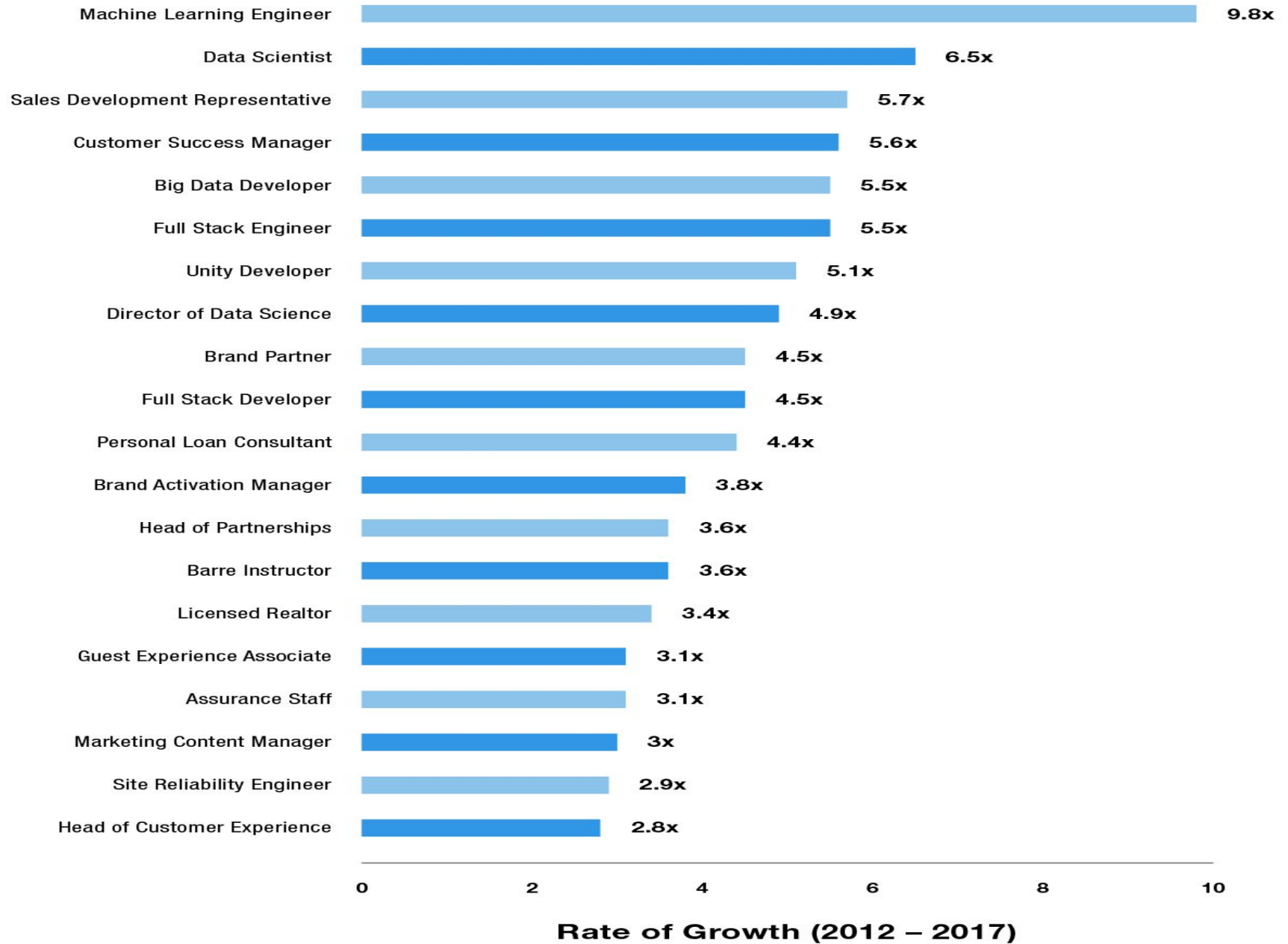
You must do ALL the assignments

You must choose your project from day 1

Why are YOU here?

Looking for a Job?

Top 20 Emerging Jobs



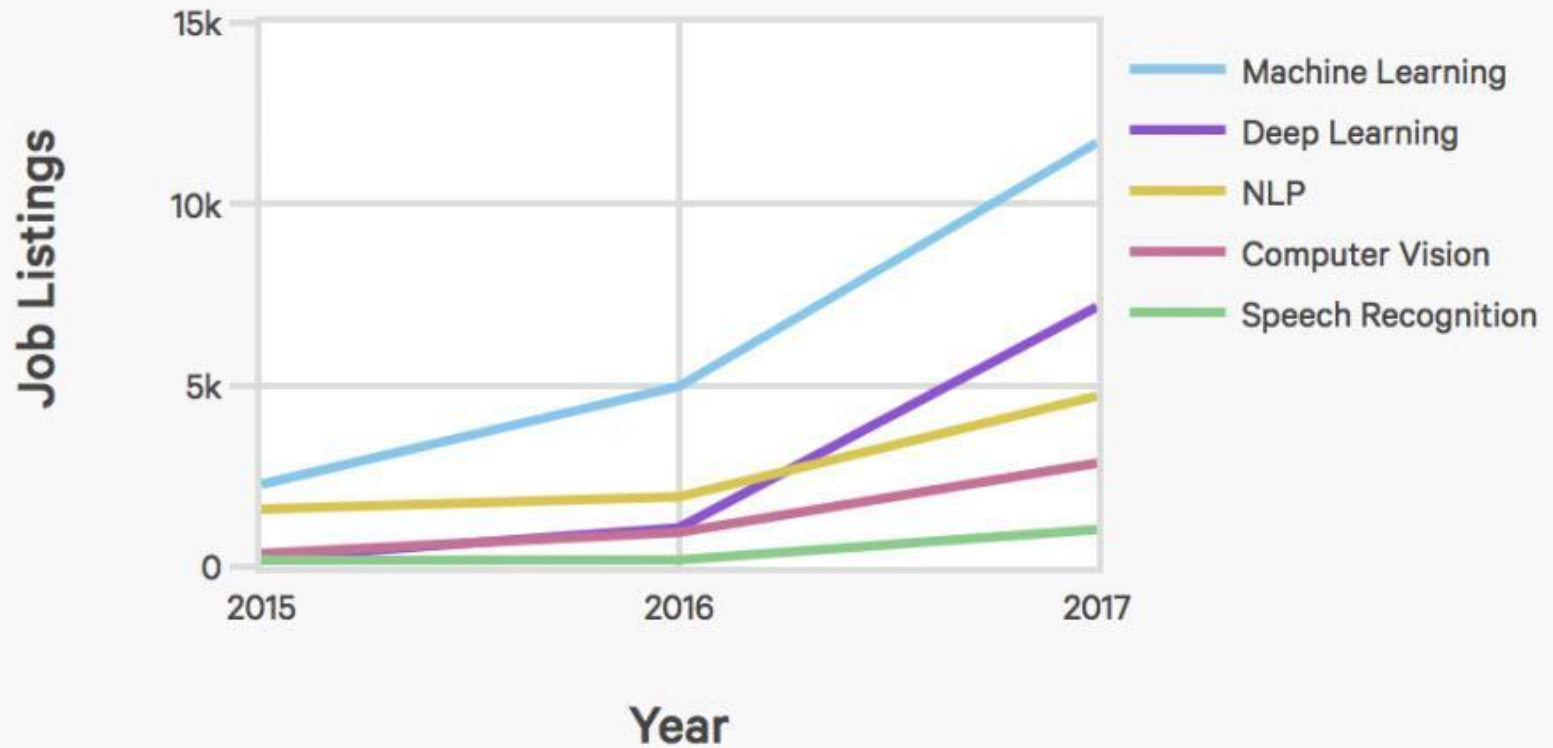
Deep Learning Jobs Demand Trend

The demand trend of job ads citing Deep Learning as a proportion of all IT jobs with a match in the Processes & Methodologies category.



<http://www.itjobswatch.co.uk/jobs/uk/deep%20learning.do>

Job Openings, Skills Breakdown (Monster.com)



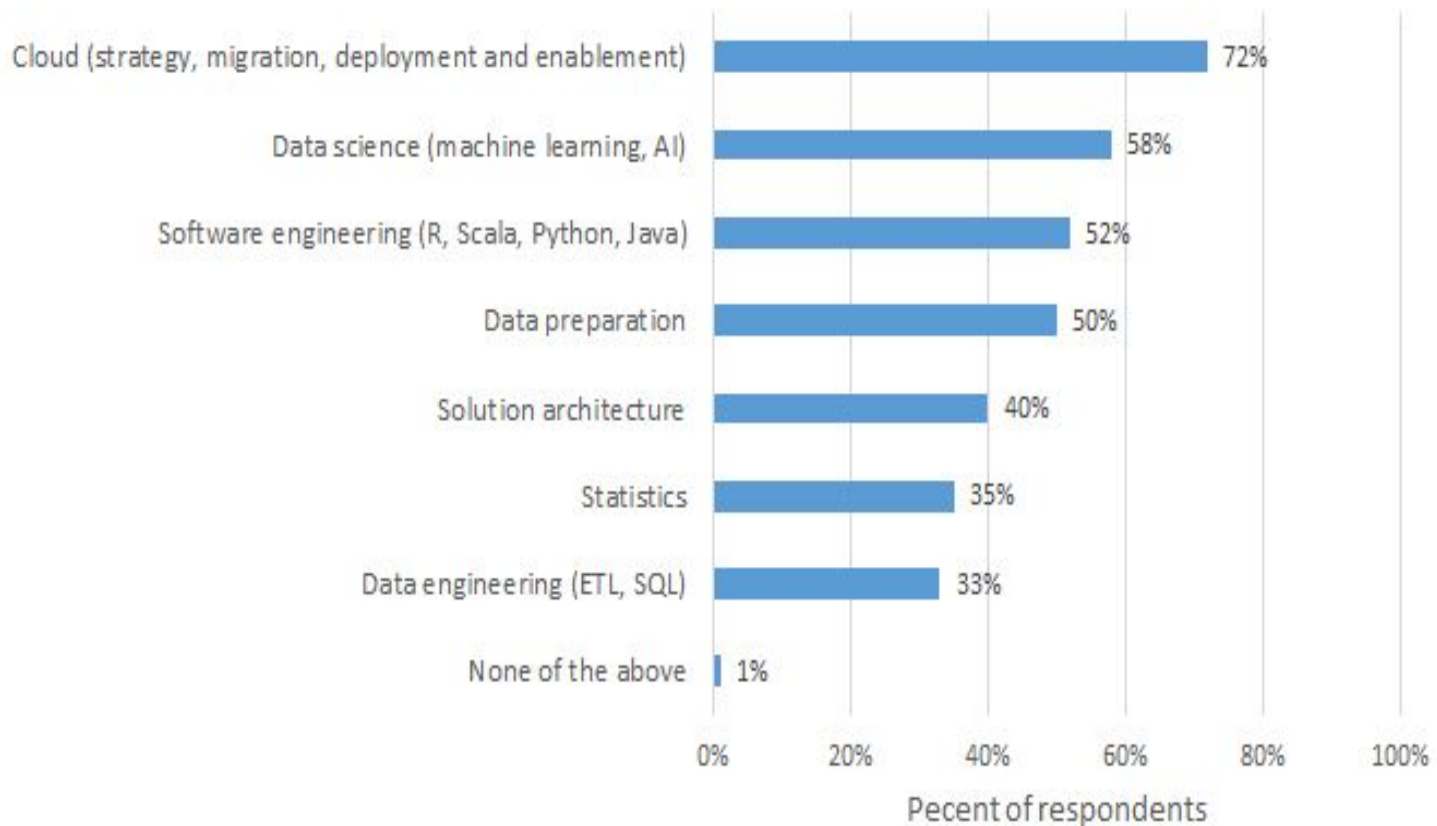
Source: Monster.com

AIINDEX.ORG



Run your own business?

Which data-related technical skills do you need to achieve your business goals?



Want to advance technology?

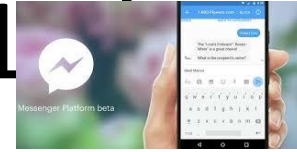


AI revo

IBM Pepper

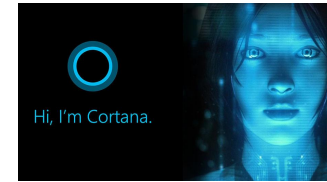
Google now

201



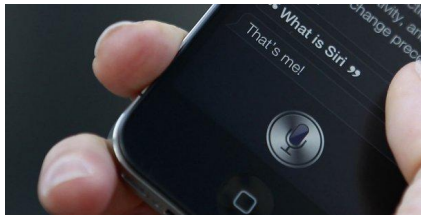
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FB Chatbot



MS Cortana

Apple Siri

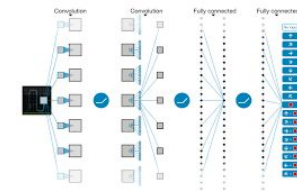


NLP



DeepMind
AlphaGo

Robotics/
Control

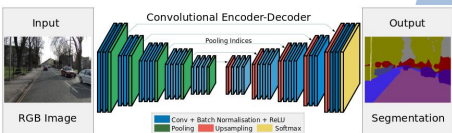


Atari
DeepMind

SegNet



Image
Video

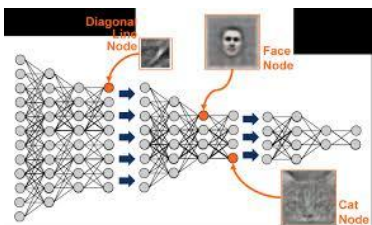


Comma.ai
HAD

Speech



MS Speech



AlexNet

DeepSpeech 2



Course Strategy

- Python
- Ipython notebooks
- Keras
- Google Colab
- Kaggle



Practice vs. Theory

Practice the Theory!

Coursat.ai

<http://coursatai.s3-website-us-east-1.amazonaws.com/>



PRACTICAL COURSES FOR APPLIED AI



APPLY

Project based



REFINE

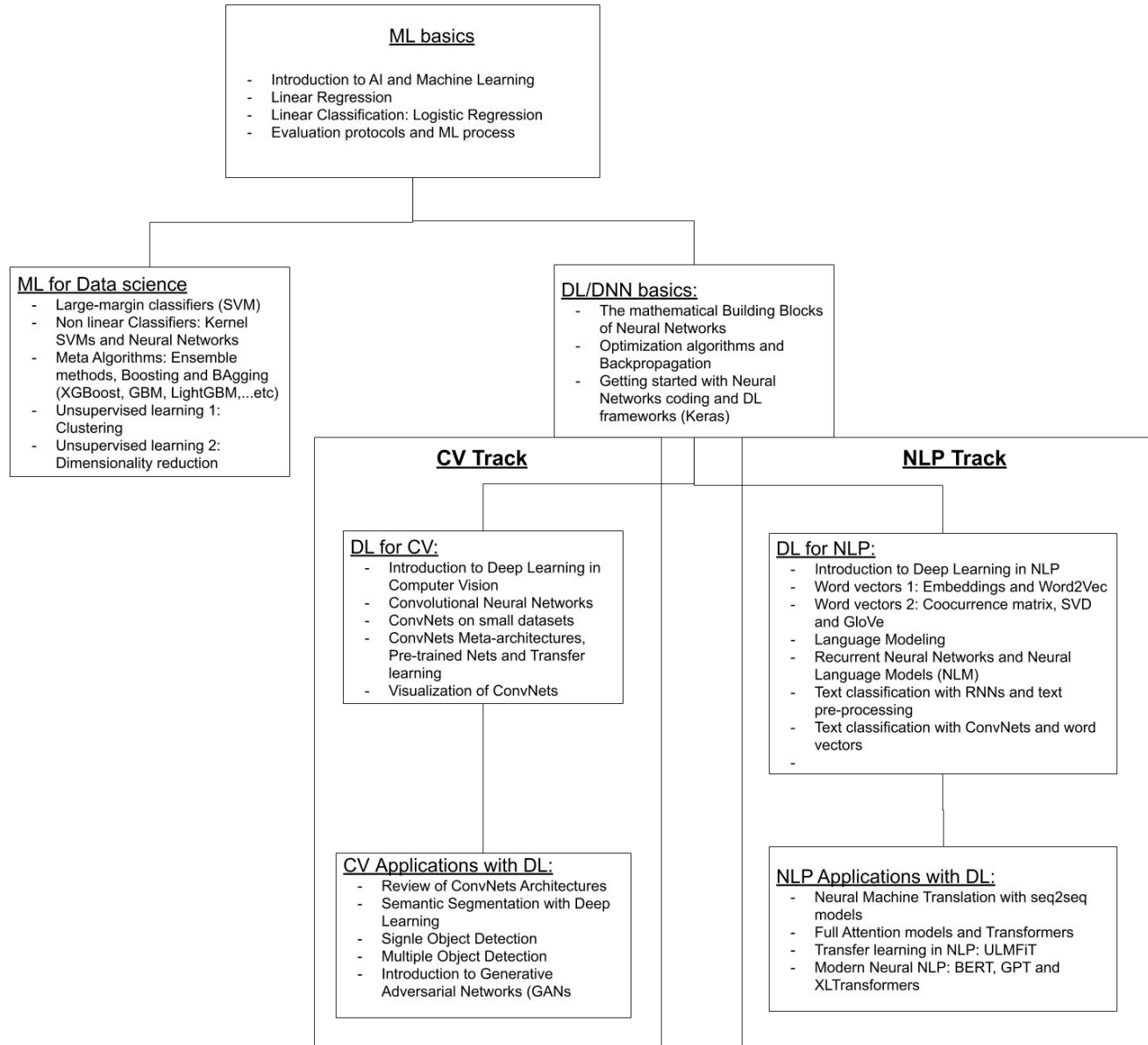
Learn by doing



DEPLOY

Use in your own project

Tracks



AI in Computer Vision

“From pixels to Semantics”

Start early with Kaggle!

<https://www.kaggle.com/c/digit-recognizer>

<https://www.kaggle.com/c/dogs-vs-cats-redux-ker-nels-edition>

<https://www.kaggle.com/c/house-prices-advanced-regression-techniques>

<https://www.kaggle.com/c/just-the-basics-strat-a-2013>

Course Plan

- 3hrs, Twice a week (or more)
- Google Colab
- PROJECT Kaggle
 - From Day 1
- Google Classroom → Post material, assignments,...etc (one way)
- Slack (ALL ways communication and discussion)
 - send your emails to ahmad.elsallab@gmail.com (if not already joined)
- Assignments
 - Assignments (4-5) → 40%
 - Project (Kaggle) → 60%
 - Better to start from day 1
 - Open to proposals

What this course is NOT about?

- Particular framework (TF, Pytorch, OpenCV,...)
- Optimized ML and deployment (Embedded or web)
- Fresh/latest SoTA

Course Contents

- Introduction to AI
- Python, numpy and ipython basics (optional)
- Supervised ML Basics: Regression and Classification
- Mathematical building blocks of neural nets
- Getting started with Neural Nets programming with Keras
- Machine learning process and evaluation protocols
- Introduction to ConvNets
- Transfer learning 1: Using ConvNets with small datasets
- Transfer learning 2: Using pre-trained ConvNets
- Visualizing ConvNets
- Semantic segmentation
- Single Object Detection
- Multi Label Classification
- Multiple Objects Detection

Candidate projects

<https://www.kaggle.com/c/aptos2019-blindness-detection>

<https://www.kaggle.com/c/siim-acr-pneumothorax-segmentation>

<https://www.kaggle.com/c/rsna-pneumonia-detection-challenge>

<https://www.kaggle.com/c/ultrasound-nerve-segmentation>

<https://www.kaggle.com/c/intel-mobileodt-cervical-cancer-screening/>

<https://www.kaggle.com/c/state-farm-distracted-driver-detection>

<https://www.kaggle.com/c/carvana-image-masking-challenge>

<https://www.kaggle.com/c/3d-object-detection-for-autonomous-vehicles/>
overview

<https://www.kaggle.com/c/bosch-production-line-performance>

<https://www.kaggle.com/c/open-images-2019-object-detection>

<https://www.kaggle.com/c/cdiscount-image-classification-challenge/>

<https://www.kaggle.com/c/airbus-ship-detection>

<https://www.kaggle.com/c/tgs-salt-identification-challenge>

<https://www.kaggle.com/c/dstl-satellite-imagery-feature-detection/>

References

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Lecture 1: Introduction to AI

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Break + Survey

https://docs.google.com/presentation/d/1mgK_uuL7nds3JP1cq1SsmDIz3pL46g79CADOIRb-etU/edit#slide=id.g5efa052746_0_6