



# The MOOC revolution: Status and next steps

**Andrew Ng**  
Stanford University & Coursera

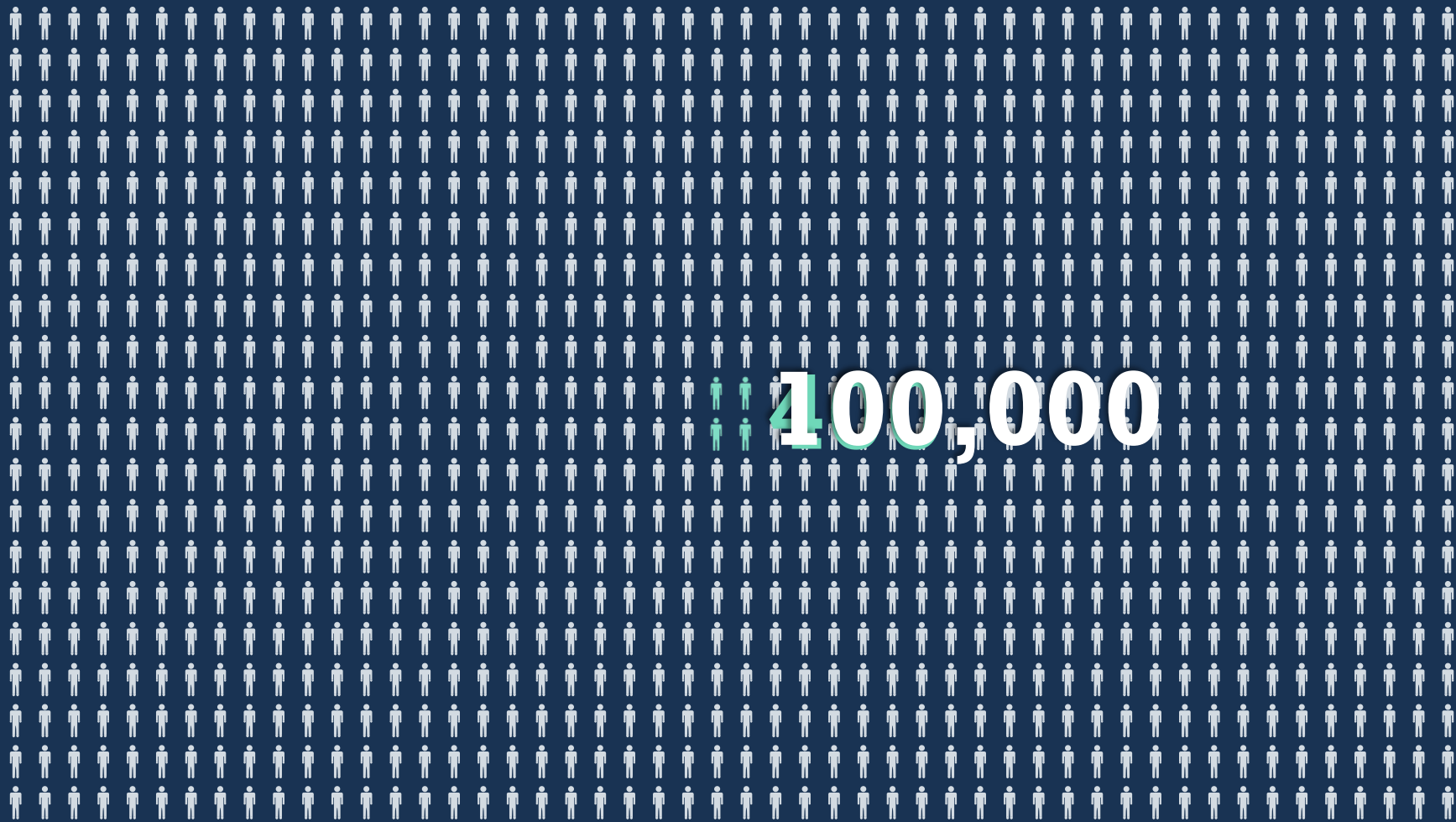


18 of the top 25 US Universities  
(ARWU rankings)

49 top universities  
from 20 countries

9 other partners  
(teacher professional development)

# Courses from Top Universities



## NUMBER OF STUDENTS



**111,479**  
Oct. 2011

**5,266,200**  
Oct. 2013

## NUMBER OF COURSES AVAILABLE



**2**  
Oct. 2011

**532**  
Oct. 2013

## NUMBER OF PARTNER UNIVERSITIES



**1**  
Oct. 2011

**107**  
Oct. 2013

## NUMBER OF COURSE INSTRUCTORS



**731**

## TIME SPENT WATCHING VIDEOS



**48,784,829 hours**  
that's 5,565 years...

## TOTAL COURSE ENROLLMENTS



**19.1 Million**

## TOTAL VIDEO VIEWS



**301,395,723**

## BREAKDOWN OF COURSES

### Top 5 most popular course subjects

1. Computer Science	9,428,982
2. Humanities	3,861,497
3. Business & Management	3,578,064
4. Economics & Finance	3,302,253
5. Information, Tech & Design	2,399,790


*(By total number of enrollees)*

# 108 Partners


# 550 Courses

# 6.0 million




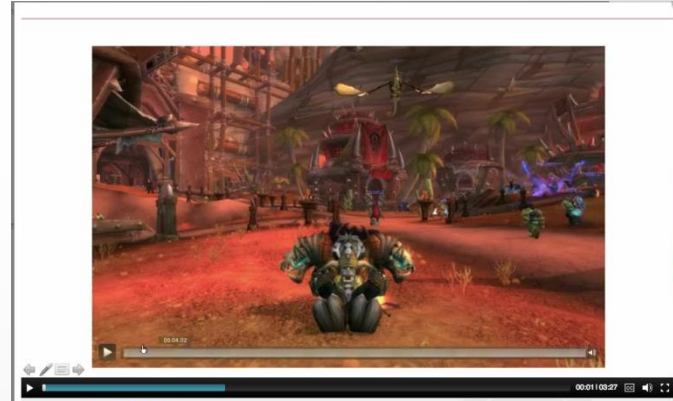
 Sustainability




 Health Policy & the Affordable Care Act



 Introduction to Sociology



 Gamification

# Video based instruction





Home

Video Lectures

Reading Assignments

Quizzes

Discussion Fora

Writing Assignment

Hangout

Click Here

About the Course

About Us

## Video Lectures

Having trouble viewing lectures? Try these tips

### ▼ Introduction

[Meet Dan Ariely \(2:53\)](#)[Site Tour \(8:35\)](#)[Managing Your Time](#)

### ▼ Week 1: Irrationality

[1.1 Visual and Decision Illusions \(19:16\)](#)[1.2 Defaults \(19:57\)](#)[1.3 Do We Know Our](#)[1.4 Choice Sets and](#)[1.5 The Long-lasting Effects of Decisions \(22:09\)](#)[1.6 Learning from Our Mistakes \(9:58\)](#)[Special Guest: Gavan Fitzsimons \(15:11\)](#)

#### 1.1 Visual and Decision Illusions (19:16)

Don't click "Continue" Yet! First, answer the below question, then click submit.

##### Lecture Quiz: 1.1 (Bandage Removal)

Which strategy of bandage removal would you choose?

Short bursts of extreme pain (20028 Responses)

48%

Long periods of less intense pain (21290 Responses)

52%

Total: 41318 respondents

If you have trouble seeing the poll, [click here](#) to open it in a new window.

Continue





Who discovered the theory of general relativity?

Albert Einstein

Submit

What is the derivative of  $\frac{\sin(x)}{x}$  w.r.t.  $x$  ?

$(x * \cos(x) - \sin(x)) / x^2$

Preview

Your submission is equivalent to:  $\frac{x \cos(x) - \sin(x)}{x^2}$

```
image = new SimpleImage("puzzle-copper.png");

for (pixel: image) {
    // your code here
    pixel.setRed(0);
    pixel.setGreen(pixel.getGreen() * 10);

    pixel.setBlue(pixel.getBlue() * 10);
}

print(image);
```

Run

	A	B	C	D
1		2012	2013	2014
2	Units sold	20,000	30,000	35,000
3	Revenue	400,000	600,000	700,000
4	COGS	100,000	150,000	175,000
5	Ad spend	30,000	40,000	40,000
6				
7	<b>Distributor model</b>			
8	Sales People	1	2	5
9	Dist. per sales person	3	5	8

## Autograded Homeworks and Exercises



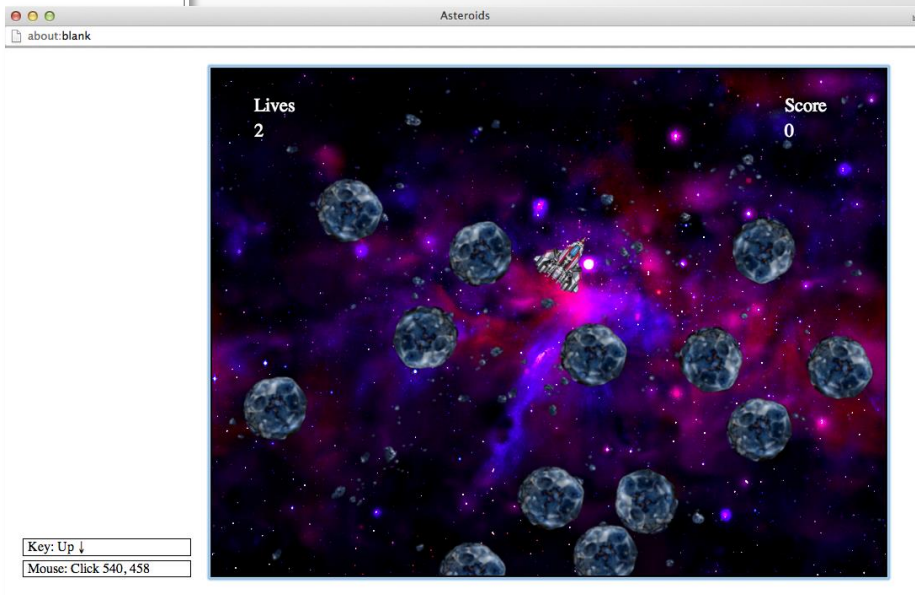
# An Introduction to Interactive Programming in Python

by Joe Warren, John Greiner, Stephen Wong, Scott Rixner

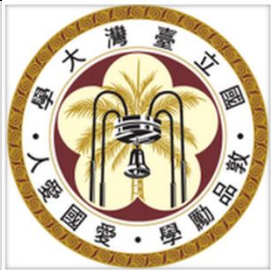


```
CodeSculptor Docs Demos Courses

1 # implementation of Spaceship - program template for RiceKo
2 import simplegui
3 import math
4 import random
5
6 # globals for user interface
7 WIDTH = 800
8 HEIGHT = 600
9 score = 0
10 lives = 3
11 time = 0.5
12 started = False
13
14 class ImageInfo:
15     def __init__(self, center, size, radius = 0, lifespan =
16         self.center = center
17         self.size = size
18         self.radius = radius
19         if lifespan:
20             self.lifespan = lifespan
21         else:
22             self.lifespan = float('inf')
23         self.animated = animated
24
25     def get_center(self):
26         return self.center
27
28     def get_size(self):
29         return self.size
30
31     def get_radius(self):
32         return self.radius
33
34     def get_lifespan(self):
35         return self.lifespan
36
37     def get_animated(self):
38         return self.animated
39
40
41 # art assets created by Kim Lathrop, may be freely re-used
42
43 # debris images - debris1_brown.png, debris2_brown.png, deb
44     debris1_blue.png, debris2_blue.png, debris
45 debris_info = ImageInfo([320, 240], [640, 480])
46 debris_image = simplegui.load_image("http://commondatastorage
47
48 # nebula images - nebula_brown.png, nebula_blue.png
49 nebula_info = ImageInfo([400, 300], [800, 600])
50 nebula_image = simplegui.load_image("http://commondatastorage
51
52 # splash image
53 splash_info = ImageInfo([200, 150], [400, 300])
54 splash_image = simplegui.load_image("http://commondatastorage
55
56 # ship image
57 ship_info = ImageInfo([45, 45], [30, 90], 35)
58 ship_image = simplegui.load_image("http://commondatastorage
59
60 # missile image - shot1.png, shot2.png, shot3.png
```



# Share and run code in the browser



Benson Yeh

**Game integration (National Taiwan University)**

Andrew Ng



## Art and Inquiry: Museum Teaching Strategies For Your Classroom

by Lisa Mazzola



**Your Final Project** for this course is to take the concepts we have explored each week and create a resource that you can incorporate into your teaching. The project outline below has been structured to allow you to tailor the content to the context in which you teach so that it can be most useful. The goal of this final project assignment is to give you an opportunity to practice and be creative with the concepts from the class in a forum where you can share ideas and get feedback from your peers. The peer assessment process will also give you the opportunity to see the ideas that others come up with. Be **creative!** **This is your chance to apply the course concepts to real-world situations**

Your assignment is to select an artwork that you would like to use as the starting point for an inquiry based lesson in your classroom.

**Format:** Please provide the following information in the order that it is presented below:

1. Subject Area
2. Intended grade level range
3. Artwork Selection (please use the "Upload an Image" button or insert a link to the image)
4. Artwork Title
5. Artist
6. Date
7. Materials

### Evaluation/feedback on the above work

Does the activity relate to the artwork?  
Are the instructions/prompts clear?  
Is the activity developmentally appropriate?



## LaPtabel laptop table



Ramaswamy Venkatachalam  
Gujarat, India

## DuoSlim portable device holder



Aranzazu Hurtado Ruiz  
Madrid, Spain

## Neo-WD space-efficient workdesk



Paul Mendoza  
Manila, Philippines

**Creative, open-ended homework via peer grading**



## Social Psychology Scott Plous



### Day of Compassion Award

In August and September of 2013, students from over 200 countries took the world's first Social Psychology "MOOC" (massive open online course). The class was offered by Wesleyan University, hosted by [Coursera.org](https://www.coursera.org), and drew **more than 250,000 students**, making it the largest synchronous university course ever given.

The final assignment of the course, "The Day of Compassion," asked students to live 24 hours as compassionately as possible and to analyze the experience social psychology. Roughly **700 students received a perfect score** on the assignment, as a class then voted on which of these students deserved a Day of Compassion Award sponsored by the Stanford University [Center for Compassion and Altruism Research and Education](https://ccare.stanford.edu) (CCARE).

In 2014, the grand prize winner will be flown on an **expense-paid trip to Stanford** and will have the opportunity to **meet the Dalai Lama** when he visits that area. In addition, CCARE donates \$1,000 to any prosocial nonprofit organization chosen by the grand prize winner, \$100 to nonprofits chosen by each of ten students who received Honorable Mention. [Hi](#) some other pages related to the assignment:



### Grand Prize Winner: Balesh Jindal



Balesh Jindal, a physician and **artist** who lives in a rural area near New Delhi, India, won the grand prize for finding a way to address the problem of sexual violence toward girls in her

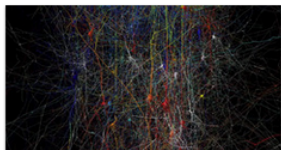
community. During the Day of Compassion, Balesh visited a local school that has **more than 2,000 female students** ranging from 4 to 17 years old and belonging to a relatively **low socioeconomic class**. The school divided students by age into five groups of 350-400 girls, and Balesh taught each group about inappropriate touching and how to report incidents of abuse. These talks uncovered **multiple cases of abuse** by neighbors, brothers, cousins, and even fathers.

After the Day of Compassion, Balesh invited the mothers of abused girls to her nearby clinic for free counseling, and she decided to set aside **one day each week to help these girls** and to work on reducing child sexual abuse.



[Read Complete Essay ►](#)  
[Coursera Discussion Forum ►](#)

# From Knowledge to Action



Home

Video Lectures

Quizzes

Discussion Forums

Course Information

Course Staff

Students Map

Surveys

Final Exam

Course Wiki

Join a Meetup

Instructor Support

[Forums](#) / [Get Help Here](#) / [Course Material Help](#)

## Information storage

[Subscribe for email updates.](#)

Sort replies by: **Oldest first** Newest first Most popular

No tags yet. [+ Add Tag](#)

Student 1

a day ago

The problem summary:

How is the information stored in our brain? As in computers we use potentials, or magnetization for example to make an array of binary code (1 or 0), what is the analogous in the brain?

Steps to rep

Student 2

a day ago

-We have wid

real time, pas

Maybe in

really do

may cha

-The questio

would be the

memories? I

and where in

Actually

accurate

really jus

Comments:

Thank you so much. S

this topic or is someth

Student 3

a day ago

<https://cla>

said, but a

maybe I'm

activated,

Perhaps

female friend who

Within the human

I'm also curious h

each one and tes

Anonymous · 20 hours ago

Student 4

5 minutes ago

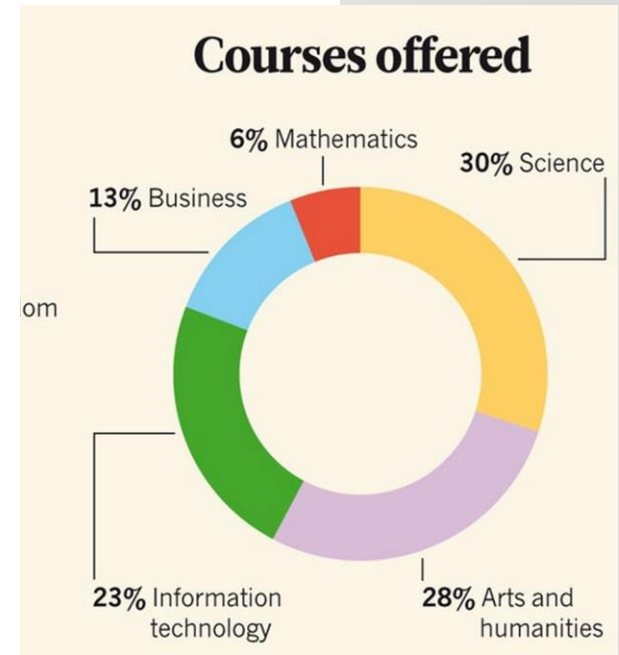
I've already worked a lot on this before starting with this course (nonetheless I learned a lot of details in the course). One of the most interesting papers I found is that information is represented feature based <http://www.cs.rochester.edu/users/faculty/dana/tanifuji.pdf>. I've already tried around building some small information processing algorithms based on this. If you are interested we could probably talk a bit about it.

# Community & User-Generated Content

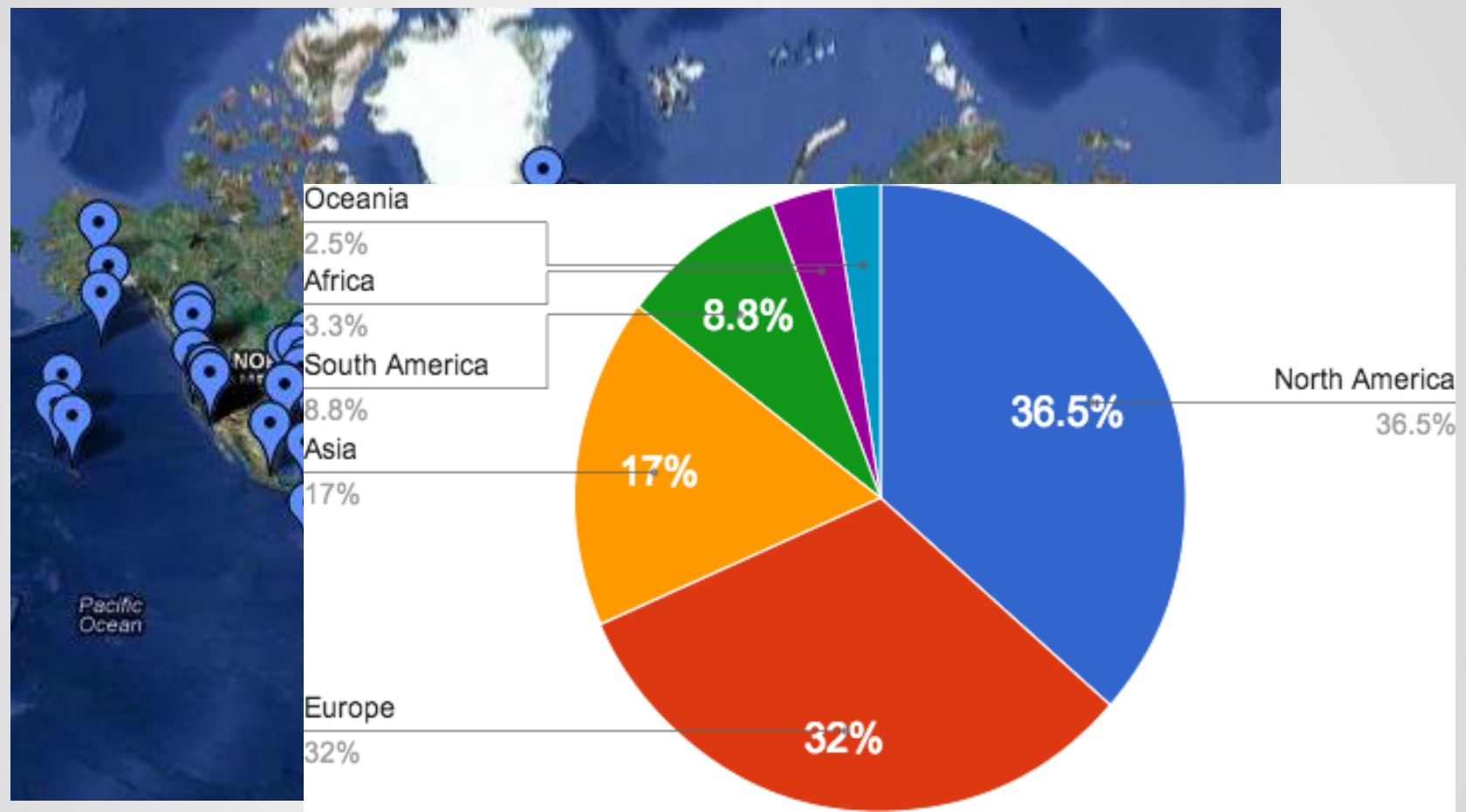
Andrew Ng



	UNIVERSITY OF MARYLAND, COLLEGE PARK	
	<b>E-learning and Digital Cultures</b> Jeremy Knox, Sian Bayne, Hamish Macleod, Jen Ross, Christine Sinclair	Jan 28th 2013 5 weeks long
	UNIVERSITY OF EDINBURGH	
	<b>Introduction to Philosophy</b> Dave Ward, Duncan Pritchard, Michela Massimi, Suilin Lavelle, Matthew Chrisman, Allan Hazlett, Alasdair Richmond	Jan 28th 2013 7 weeks long
	UNIVERSITY OF EDINBURGH	
	<b>The Social Context of Mental Health and Illness</b> Charmaine Williams	Jan 28th 2013 6 weeks long
	UNIVERSITY OF TORONTO	
	<b>Critical Thinking in Global Challenges</b> Celine Caqueneau, Mayank Dutia	Jan 28th 2013 5 weeks long
	UNIVERSITY OF EDINBURGH	
	<b>Introduction to Computer Networks</b> Arvind Krishnamurthy, David Wetherall, John Zahorjan	Jan 28th 2013 10 weeks long
	UNIVERSITY OF WASHINGTON	
	<b>Grow to Greatness: Smart Growth for Private Businesses, Part I</b> Edward D. Hess	Jan 28th 2013 5 weeks long



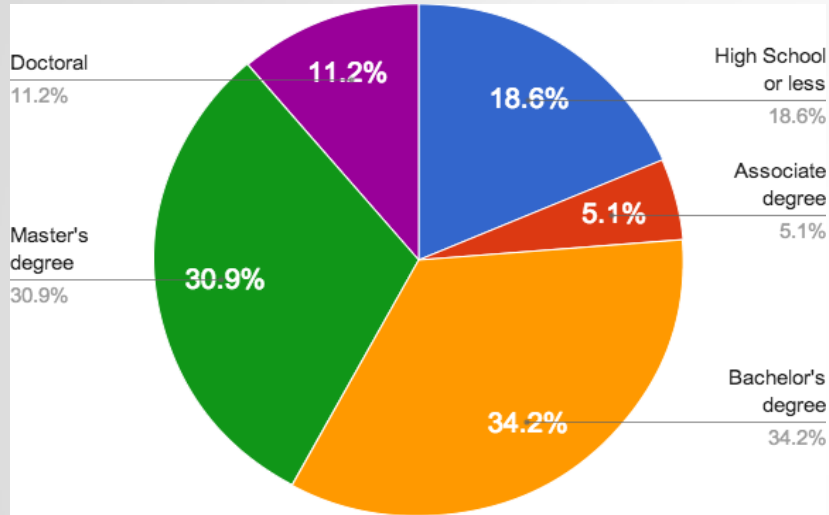
**The Humanities, Sciences, Engineering, Business, ....**



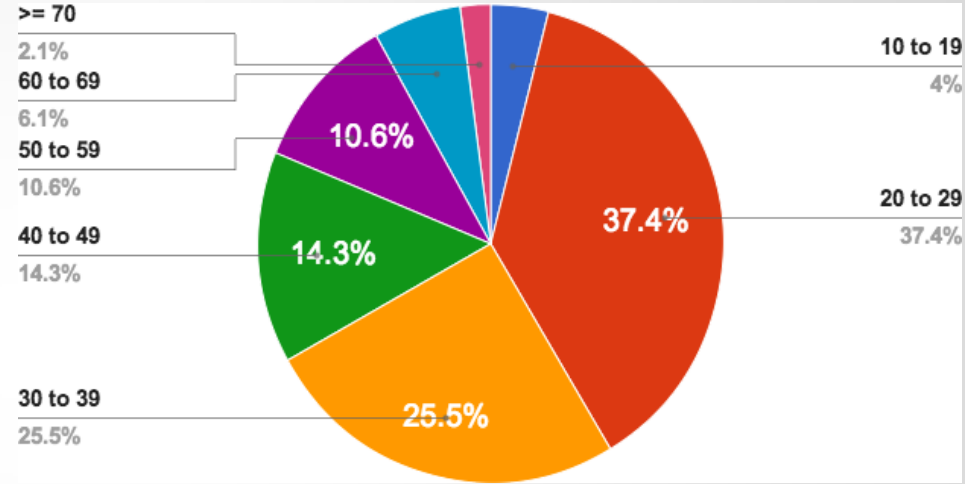
**Global community of learners**



Coursera makes studying easier for me. I could sit at home and learn like I'm at school, no distractions just me, my headphones and my books. ... I could earn certificates ... without spending a dime to get to my local school. It helps me a lot since my mom is in the hospital and financially, I cannot afford to attend school. (*Amanda, Dominica*)



>75% have a Bachelor's degree



Most students 20 to 39 years old

## Student demographics

全球合作伙伴 (17) · 美国州立院校 (0)

☐ 即将开始

符合条件

☐ 签名认证☐ 所有语言☐ 英语☒ 中文

☐ 法语

☐ 西班牙语☐ 葡萄牙语☐ 土耳其语☐ 德語☐ 傻逼☐ 乌克兰语☐ 阿拉伯语☐ 爵士利運☐ 日通

○ 二 期

☒ 所有类别☐ 艺术

Ge Li 李戈, Ph.D.

计算概论A是针对“主干课程。本课程以计算机科学技术知识所必需的程序设计的基础知识”技能。

课程负载: 6-8 小时

语言: Chinese

字幕: Chinese

### 运作方式



**Andrew Ng (吴恩达)** 是斯坦福大学计算机科学的副教授。他还担任斯坦福大学人工智能实验室主任，该实验室是斯坦福大学主要的人工智能研究机构，共有15名教授以及150名学生和博士后。2006年，他与斯坦福大学专业发展中心（SCDP）创立了SEE（Stanford Engineering Everywhere），并将斯坦福大学数十个工程学科课程开放给大众，这也是斯坦福大学第一次尝试免费分布式的教育方式。有超过一百万人观看了SEE的课程视频。在斯坦福大学，他同时还担任

导开发了OpenClassroom 和 ml-class/db-class 在线教育平台，也就是 Coursera 的前身。2011年秋，他在ml-class平台上讲授了机器学习课程，该课程是斯坦福最早的大型在线课程之一，共有超过10万名学生参加。

除了在线教育以外，吴恩达还在机器学习领域工作，特别致力于使用大规模的人脑模拟来构建人工智能系统。他的前期工作包括无人驾驶直升机、斯坦福人工智能机器人 (STAIR) 项目和 ROS (目前使用最广泛的开源机器人软件平台)。吴恩达作为作者或共同作者在机器学习领域发表了超过1501篇论文，他的团队获得过 ICML、ACL、CEAS 和 3DRR 等会议的最佳论文及最佳学生论文奖。他是艾尔弗·P·斯隆奖金获得者，还在2009年获得了人工智能领域的最高奖之一的 IJCAI Computers and Thought award。


主席



**Lila Ibrahim** (莉拉·易卜拉欣) 是Coursera 的主席，她还是 Team4Tech 公司的联合创始人以

course | Global Partners Courses Partners About | Andrew Ng

Edit Course Description Edit Session Descriptions Edit Session Materials

 **北京大学**  
PEKING UNIVERSITY

# Introduction to Computing

计算概论

Ge Li 李戈, Ph.D

计算概论A是针对“信息主干课程。本课程的视频科学技术知识所需的序设计的基础知识”，技能。


课程负载: 6-8 小时 / 周

语言: Chinese

字幕: Chinese

course | 全球合作伙伴 课程 合作伙伴 关于 | Andrew Ng

修改课程介绍 编辑班次概述 编辑班次概述

 **UNIVERSITY OF MICHIGAN**

# Model Thinking

Scott E. Page

In this class, you will learn how to think with models and use them to make sense of the complex world around us.


课程负载 4-8 小时 / 星期

语言: 英语

字幕: 英语, 乌克兰语, 中文

预览课程

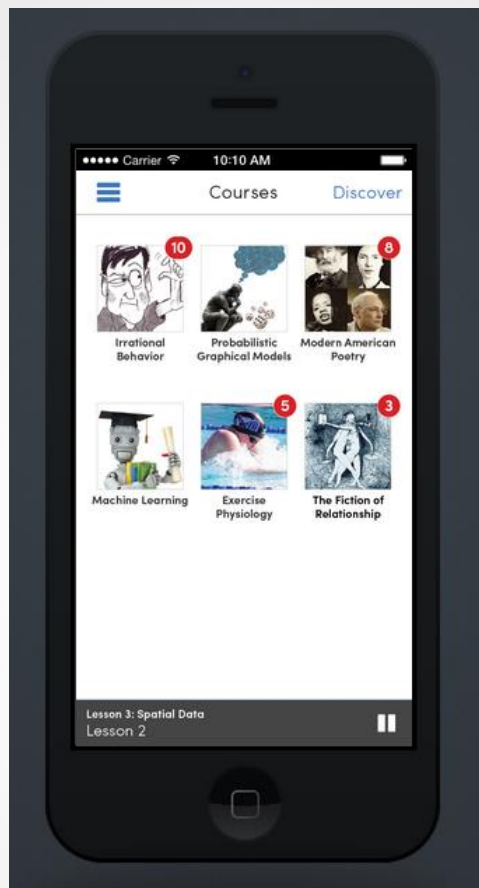
观看视频简介



字幕: 英语, 乌克兰语, 中文



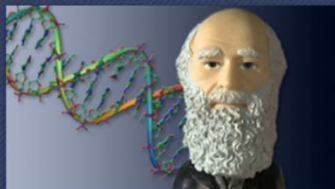
Courses in multiple languages



Mobile app



## Earn a Verified Certificate.



**Duke**  
UNIVERSITY

Introduction to Genetics and Evolution

Mohamed Noor

Regular price: ~~\$90.00~~  
Introductory price: \$49.00

JOIN SIGNATURE TRACK »



### Your Work, Your Identity

Link your coursework securely to your real identity using your photo ID and unique typing pattern.



### Earn a Verified Certificate

Earn official recognition from Duke University and Coursera for your accomplishment with a verifiable electronic certificate.



### Share Your Success

Share your course records with employers, educational institutions, or anyone else through a unique, secure URL.

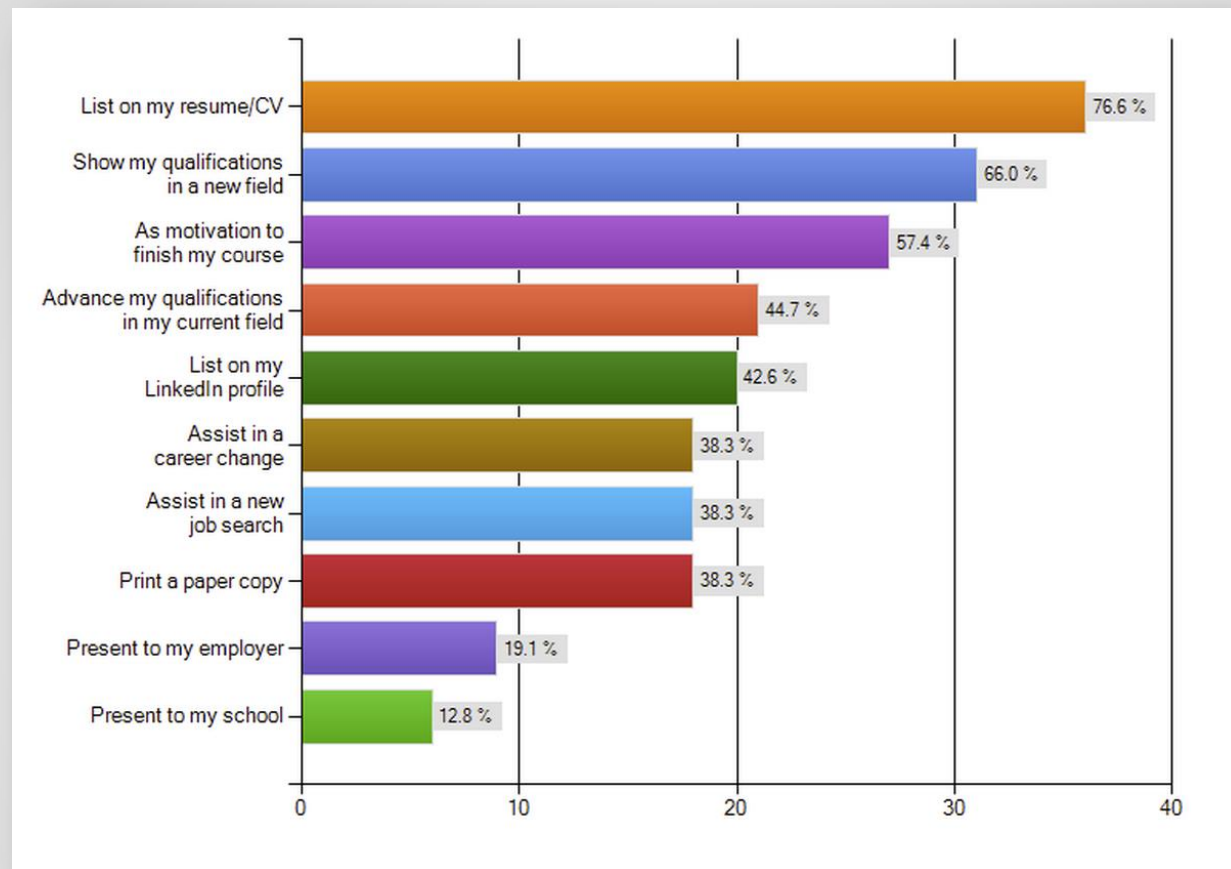
# Signature Track Courses

Andrew Ng



**Signature Track**

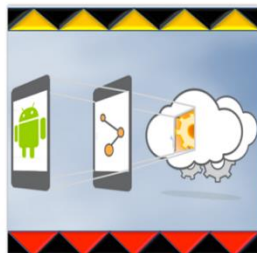
Andrew Ng



## Student Motivations: Plans for verified certificate



**Data Science**  
Johns Hopkins University



**Mobile Cloud Computing with Android**  
UMD & Vanderbilt



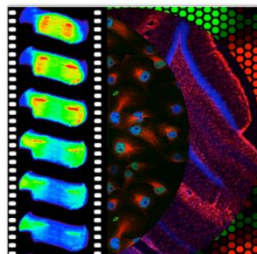
**Challenges in Global Affairs**  
Leiden & UNIGE



**Foundations of Teaching for Learning**  
Commonwealth Education Trust



**Modern Musician**  
Berklee College of Music



**Systems Biology**  
Icahn School of Medicine at Mount Sinai

- 1 Cryptography
  - 2 Software Security
  - 3 Usable Security
  - 4 Hardware Security
-  Capstone Project

Course 1

## Cryptography

Upcoming Session: Sep 15th 2014

Duration: 8 weeks

### Introduction and Motivation

- Classical Encryption Schemes
- Principles of Modern Cryptography

### Perfect Secrecy and Its Limitations

### Private-Key Encryption



JOHNS HOPKINS  
UNIVERSITY

## Specialization Certificate

has been presented to

Jane Learner

on July 6, 2014 for successfully completing

Data Science

a non-credit series authorized by Johns Hopkins University through Coursera

*Signature*

Professor John Doe  
Department of Lorem Ipsum

*Signature*

Professor John Doe  
Department of Lorem Ipsum

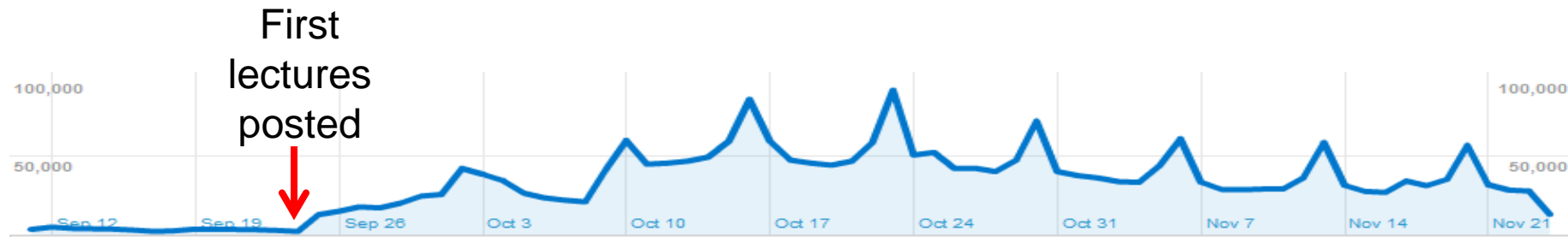


*Signature*

Professor John Doe  
Department of Lorem Ipsum

*Signature*

Professor John Doe  
Department of Lorem Ipsum



# STATISTICS & ANALYTICS



Week of January 07

## Algorithms: Design and Analysis, Part 2

### What you did this week

✓ Logged into [class](#). :)

### Upcoming Deadlines

- ✓ Completed [Problem Set #1](#)
- ✓ Completed [Programming Assignment #1](#)
- ✓ Completed [Problem Set #2](#)
- ✓ Completed [Programming Assignment #2](#)

#### [Problem Set #3](#)

Due Date: Monday, January 07, 2013 at 08:59:00 AM (CET)

Hard Deadline: Monday, February 11, 2013 at 08:59:00 AM (CET)

#### [Programming Assignment #3](#)

Due Date: Monday, January 07, 2013 at 08:59:00 AM (CET)

Hard Deadline: Monday, February 11, 2013 at 08:59:00 AM (CET)

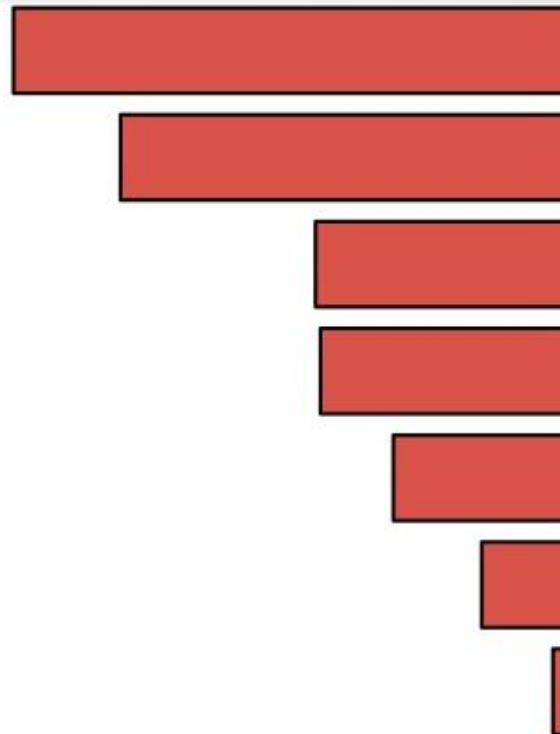
### Up next

Watch [WIS in Path Graphs: A Linear-Time Algorithm \(10 min\)](#)

### My Progress

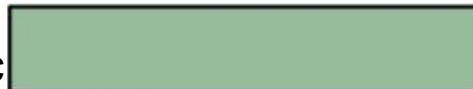
Videos  (30 out of 51 videos watched!)

Assessments  (4 out of 6 assessments completed!)



deadlines only

deadlines+activity+infographic



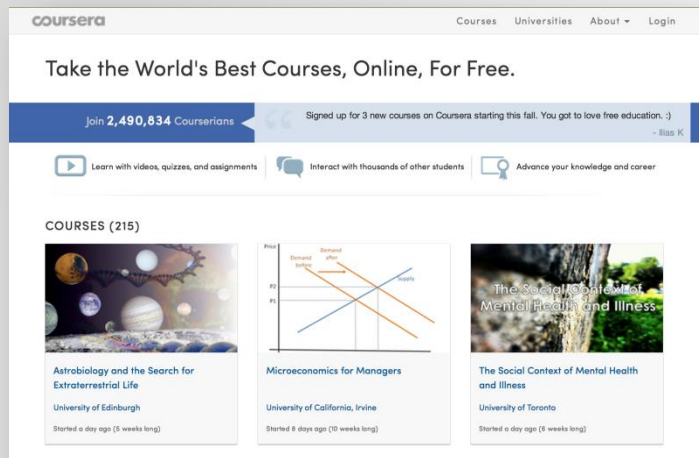
# Data: Learn how students learn



**“The mind is not a vessel that  
needs filling, but wood that  
needs igniting.”**

**—Plutarch**

*from Ian Kidd's translation of Essays*

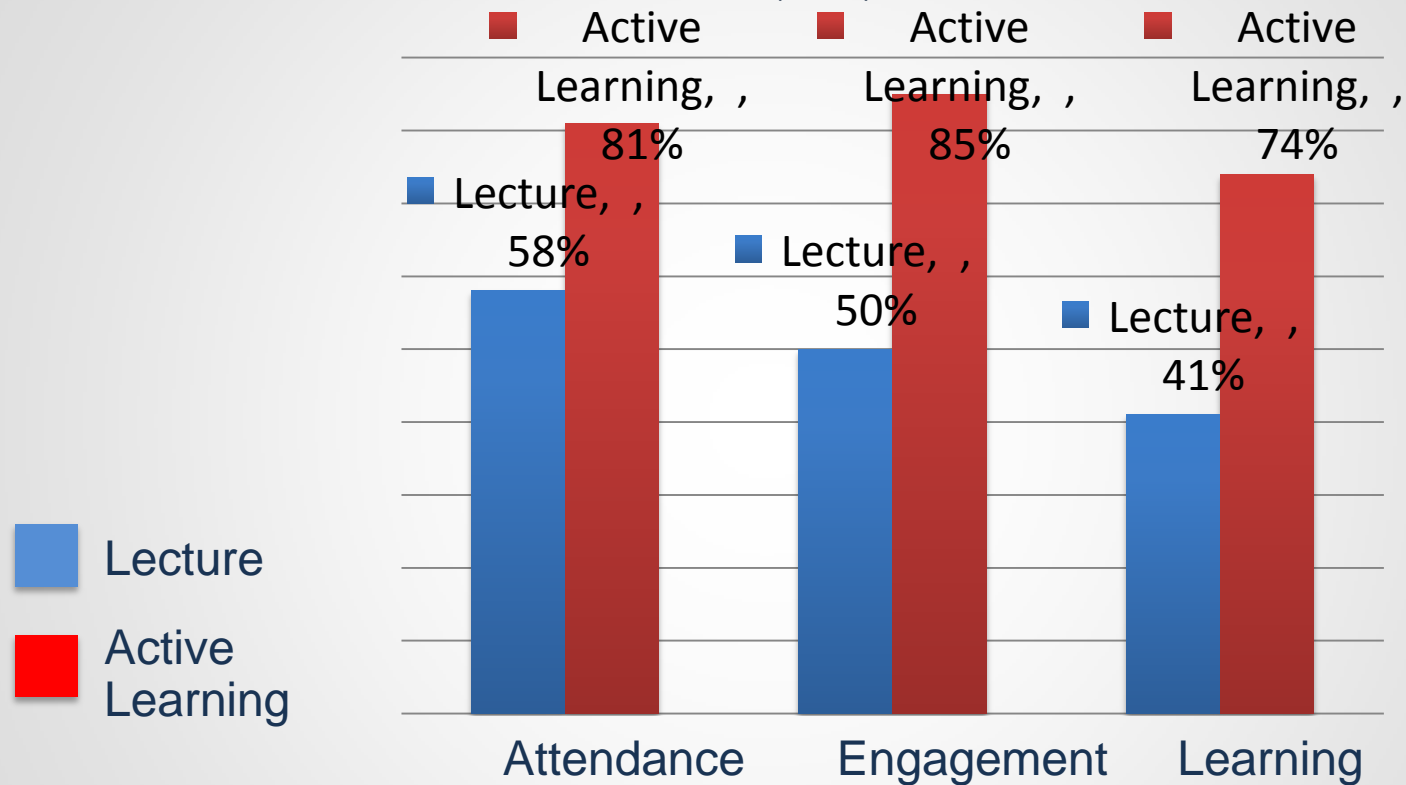


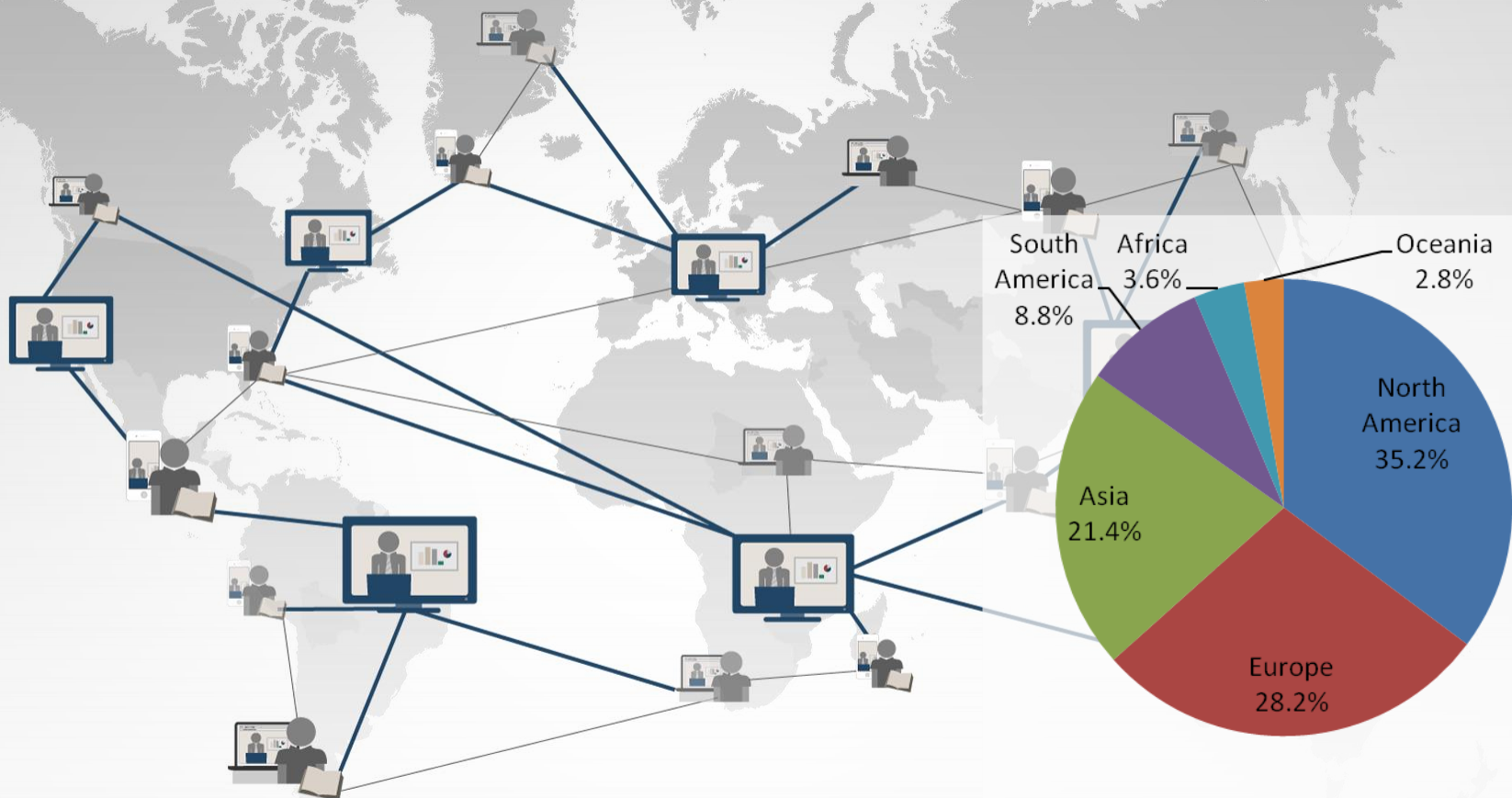
- High-quality online content
- Produced locally or adopted from another institution.
- Peer Instruction
- Small group problem solving
- Mentoring/Coaching

## The Best of Both Worlds: Flipped Classroom

"Improved Learning in a Large-Enrollment Physics Class."

L. Deslauriers, E. Schelew, and C. Wieman. *Science* (2011).





# Education for Everyone

Andrew Ng