The Online Revolution: Learning without Limits

Daphne Koller & Andrew Ng
Stanford University & Coursera
Massive Open Online Course

100,000

400
• 30 of the top 60 universities worldwide (Academic Ranking of World Universities)
• The #1 or #2 ranked university in 14 countries.
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Duration</th>
<th>Start Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-learning and Digital Cultures</td>
<td>Jeremy Knox, Sian Bayne, Hamish Macleod, Jen Ross, Christine Sinclair</td>
<td>5 weeks</td>
<td>Jan 28th 2013</td>
</tr>
<tr>
<td>Introduction to Philosophy</td>
<td>Dave Ward, Duncan Pritchard, Michela Massimi, Suilin Lavelle, Matthew Chrieman, Allan Haslert, Alasdair Richmond</td>
<td>7 weeks</td>
<td>Jan 28th 2013</td>
</tr>
<tr>
<td>The Social Context of Mental Health and Illness</td>
<td>Charmaine Williams</td>
<td>6 weeks</td>
<td>Jan 28th 2013</td>
</tr>
<tr>
<td>Critical Thinking in Global Challenges</td>
<td>Celine Caquneau, Mayank Dutla</td>
<td>5 weeks</td>
<td>Jan 28th 2013</td>
</tr>
<tr>
<td>Introduction to Computer Networks</td>
<td>Arvind Krishnamurthy, David Wetherall, John Zahorjan</td>
<td>10 weeks</td>
<td>Jan 28th 2013</td>
</tr>
<tr>
<td>Grow to Greatness: Smart Growth for Private Businesses</td>
<td>Edward D. Hess</td>
<td>5 weeks</td>
<td>Jan 28th 2013</td>
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</tbody>
</table>
Launched May 1st!

Top schools of education, top museums, and the Commonwealth Education Trust

“Coursera’s ambitious agenda to take teacher training and professional development to scale using technology is an important and crucial innovation on the road to meeting our global education goals.” (Gordon Brown, May 2013)
I applied to the Fulbright Scholarship to study at the US. In the interviews and in the essay, one of the things I stood up was my experience with Coursera, the evaluators were very glad with my story, and I received the scholarship!

(Raul Coaguila)
Reach in Developing World (Jan-Apr 2013):

- 33% of total visits
- 4.7M unique visits

- India: 824,444 uniques
- Africa: 310,606 uniques
  - biggest countries: Egypt, South Africa, Ethiopia, Algeria
- Southeast Asia: 487,536 uniques
  - biggest countries: Philippines, Thailand, Vietnam
- South & Central America: 1,239,953 uniques
  - biggest countries: Brazil, Chile, Argentina, Colombia, Ecuador, Peru, Venezuela, Bolivia
I grew a lot from answering the longer quizzes and wrestling with the complex essay grading rubrics… you are not only allowing autistic people to learn, but actually diminishing the severity of the illness itself. (Daniel Bergmann)
# users on site

Course Begins

Timeline

Real Course
Many Different Formats
Multiple choice

Short answer (regular expression)

Math expressions

Autograded Homeworks and Exercises
In-Depth Exercises
For students of similar current performance, mastery-based score improvements correlate with future performance.
Analysis by:
Matthew Salganik & Mitch Duneier
Princeton University Sociology Dept.
Creative, open-ended assignments via peer grading

LaPtabel laptop table

DuoSlim portable device holder

Neo-WD space-efficient workdesk

Ramaswamy Venkatachalam
Gujarat, India

Aranzazu Hurtado Ruiz
Madrid, Spain

Paul Mendoza
Manila, Philippines
Information storage

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 reply:
- We have many different ways to store and retrieve information, just as we have different ways of using our brain.
- The question is: how do we store information in our brain?
- The answer is: we store information in our brain by creating a network of connections between neurons.

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/taniluji.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.
Global Network of Communities

2490 Coursera communities
Department of Computer Science

The Department of Computer Science is responsible for teaching and research in computer science at the University of Helsinki.

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Coursera course on Machine Learning

Last autumn, Stanford for the first time organized a MOOC (massive open online course) on machine learning (http://www.ml-class.org). The course has since become part of the offering of Coursera (https://www.coursera.org/course/ml) and seems to be offered at least a few times per year. (For instance, there is currently an on-going course.)

Similarly to last year, during this academic year (i.e. autumn term 2012 and spring term 2013), it will again be possible to obtain credits for taking the above course, and this can be used as a substitute for our department's own local course on the same topic, called Introduction to Machine Learning (http://www.cs.helsinki.fi/en/courses/582631/2012/slk/1).

Does not confer Stanford credit. Student identify not verified.
Earn a Verified Certificate.

Duke University
Introduction to Genetics and Evolution
Mohamed Noor

Regular price: $90.00
Introductory price: $49.00

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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

Graph showing comparison between Non-SigTrack and SigTrack for Overall and Highly Committed.
Over 1,000 applications accepted

• A physician from Egypt planning to teach Nutrition for Health Promotion and Disease Prevention in her village despite a disorganized Ministry of Health

• A Bangladeshi professional studying Global Sustainable Energy to improve the 53% access to electricity in Bangladesh

• A student from Chile taking Neurons, Synapses and Brains to prepare to apply for a PhD in Huntington’s disease research

Financial Aid
Improving Learning
Wrong student answers
College is a place where a professor’s lecture notes go straight to the students’ lecture notes, without passing through the brains of either.

—Edwin Emery Slosson
• High-quality online content
• Produced locally or adopted from another institution
• High-touch interaction with local instructor
• Active learning, problem solving, personal attention to students

The Best of Both Worlds
A New Frontier for Education

**Student Learning**

- **High**
  - Office hours
  - Traditional instruction
  - Old frontier

- **Low**
  - MOOCs
  - New frontier

**Faculty Productivity**

- **Low**
- **High**

**improve learning**

- Decrease costs

Terwiesch, 2012
Lifelong Learning

- Bachelor: 42.8%
- Master's: 36.7%
- High School: 11.8%
- Associate: 5.2%
- Doctoral: 5.4%
Education for Everyone

North America: 35.2%
Europe: 28.2%
Asia: 21.4%
South America: 8.8%
Africa: 3.6%
Oceania: 2.8%