MOOCs, kOOCs, and SMOOCHS

David Evans
http://www.cs.virginia.edu/evans
Department of Computer Science
University of Virginia
Tech-Connect 1 May 2013
Best classes...

Ron Rivest’s algorithms class
Greg Papadopoulos’ architecture class
Ned Block’s philosophy class
Morris Halle’s phonology class
Barbara Liskov’s software engineering class
Gerry Sussman’s computer science class
Walter Lewin’s Physics class

...
Learn using your whole body and all 5 senses
Collaborative, fun learning environment
Designed around students’ attention spans
Personal Mentor for Every Student
Standardized, scientifically tested curriculum
Class ends with a nap, not an exam
MOOCs have a long, long way to go!
Virtual and Artificial, but 58,000 Want Course

By JOHN MARKOFF
Published: August 15, 2011

PALO ALTO, Calif. — A free online course at Stanford University on artificial intelligence taught this fall by two leading experts from Silicon Valley, has attracted more than 58,000 students around the globe — a class nearly four times the size of Stanford’s entire computer science department to extend technology knowledge beyond the elite campus to the entire world, the university said on Tuesday.

The online students will not get Stanford grades or credits ranked in comparison to the work of other online students, a “statement of accomplishment.”

For the artificial intelligence course, students may need to write code that can recognize handwritten digits. They will not receive credit for their work, and there will be no grades. Instead, they will receive a statement of accomplishment, which they could use to impress future employers.
Hi David:

You might have heard about the online class "Introduction to Artificial Intelligence" (ai-class.org) which Peter Norvig and I are presently teaching online. After just a single Email announcing this class, 160,000 students signed up! The class is now well underway, and we have tens of thousands of students from 190 countries diligently submitting homework assignments and following the lectures. Despite the large number of students, we only use a single TA to run this. Emails expressing that we are literally changing people's lives, and we are getting routinely recognized by random people on the street who are enrolled in our class. The class was also featured on the front page of the New York Times (below the fold, though).

I am more than happy to answer any question you might have.

Sebastian
cs1120 Fall 2011 (49 students)
Designed from the start as an open on-line course
Rigorous, academic computer science course
Using search engine as a driving application
Frequent, meaningful interaction
9. Rounding Numbers

\[ \text{str(}<\text{Number}>\text{)} \rightarrow <\text{String}> \]

\[ \text{str(89)} \rightarrow '89' \]

Given a variable, \( x \), that stores the value of any decimal number, write Python code that prints out the nearest whole number to \( x \).

\[ x = 3.14159 \rightarrow \]
Secret weapon!
cs1120 Fall 2011 (49 students)
1000 students
(13 years at UVa)
Initial cs101 enrollment: 94,285
Total cs101 enrollment (through April 2013): 299,126
Number of Students

Traditional Class (MOTE)

Number of Students

Negative Impact | Positive Impact
Traditional Class (MOTES)

MOOC Expectations

Number of Students

Negative Impact | Positive Impact

More Impact
Prof. Evans,
I am a student in Udacity - CS101 as well as one of those brain damaged vets struggling with life we seem to read so much about these days. Instead of resorting to drunken violence and general self destruction (been there, done that...) I am learning, with your assistance to re-wire my brain. Current neuroscience research and a flexible academic curriculum have given me hope. While slow as molasses in January I am progressing and the changes in brain function are having profound effects on my day-to-day life. No words can express my thanks to you and Mr. Thrun. ...Good teaching and removing: stress, stigma and general bureaucratic bull from learning yields a truly beautiful, powerful growth experience.

Very best regards, ...
Just needed to tell somebody that I feel awesome!

After trying different programming languages and never following through, I took most of /r/learnprogramming's advice and picked one language (Python) and am sticking with it.

I'm taking a couple of courses to really get a good basic understanding (edx's MIT course, Udacity course and codecademy's course).

I got to the end of Udacity's first Unit and was up to the final quiz. If you don't know it, it's fine. It's probably really easy but when I got there I blanked. I looked at it, tried a couple things and said I'll do it later (I was at work and couldn't give it a lot of thought). I opened it later (still at work but everyone went home). It made a tiny bit more sense but I was still lost. When I got home I opened it up. I started getting somewhere and BOOM! It just clicked. With a little trail and error I passed! I know it's not the best way to do it but it worked. I want to go back and clean it up a little just to get into the habit of 'complex not complicated'.

I just needed to tell somebody that this gave me a major ego boost and makes me want to keep learning. Thanks for reading, carry on.
Scale Matters

Community and Contributions

Low Cost per Student

$3\frac{3}{4}$

Wendy Woudstra
Quality of Student Learning Experience

Number of Students

Direct Teacher Value = 1000/N
Produced Content = 100 + 3.75N

Direct Teacher Value = 1000/N

Quality of Student Learning Experience vs. Number of Students
Produced Content = 100 + 3.75N

Student Contributions = \( N + 0.01N^2 \)

Direct Teacher Value = \( \frac{1000}{N} \)
Produced Content = 100 + 3.75N

Student Contributions = N + 0.01N^2

Direct Teacher Value = 1000/N

Quality of Student Learning Experience

Number of Students
Scale and Community

Scale and Contribution

“Sascha” Coenen, Hamburg

YOU DACITY SEARCH

charlottesville

Search

Population Solution - CS101 - Udacity

1
2 population = {}
3 population["Shanghai"] = 17.8
4 population["Istanbul"] = 13.3
5 population["Karachi"] = 13.0
6 population["Mumbai"] = 12.5
7 population["Charlottesville"]
Python 101 - Unit 1 - understanding indices and slicing

Many people new to Python have the same reaction to indices: “this is weird”. Indices, though, permeate Python. In lists, in strings, in conditionals and are a potential source of errors until we get used them. Thus we might as well bite the bullet, get them straight and move on.

Spanish version of this post (external link) - versión en Español de este artículo (enlace externo)

First, my apologies to the experienced programmers that will find some sections of this post very basic but after the initial writing there were questions like what does default mean? that made me realize that many Udacians are really really new to programming and thus, I decided to add some explanations and go very slow. Ok, let’s do it...

We’ll use string slicing because that is the first thing that we all learn but it will serve us equally well later, in list indexing and setting ranges

Let:

```
a = '0123456789'
```

where the char at the k-th position is k.

We slice `a` using:

```
b = a[start:stop:step]
```

or, directly:

```
'b0123456789'[start:stop:step]
```

i.e., in Python, both the string and the variable object: a number, a variable, a string, a function, and so on.

Videos:

Unit 1: Strings
http://www.youtube.com/watch?v=_VUBqP5fagt&feature=related

python interpreter, text editor, ide for udacity CS101

Posted on July 19, 2012 by cb — 8 Comments ↓

- Introduction
- Installing Python
  - Linux
  - OS X
  - Windows
- 1. Interactive Mode
- Integrated Development Environments
  - IDLE
  - Other IDEs
- Text Editors
  - Linux
  - OS X
  - Windows
- Conclusion

Introduction

In my spare time this summer, I’ve been working through CS101: Building a Search Engine on udacity. I’ve written critical things about the new wave of massive online courses before, in part because I’ve never finished one. That’s not exactly a fair position from which to criticize, even if
What Should UVa Do?
What Mr. Jefferson Would Have Wanted
A system of general instruction, which shall reach every description of our citizens, from the richest to the poorest, as it was the earliest, so will it be the latest, of all the public concerns in which I shall permit myself to take an interest. Nor am I tenacious of the form in which it shall be introduced. Be that what it may, our descendants will be as wise as we are, and will know how to amend and amend it until it shall suit their circumstances. Give it to us, then, in any shape, and receive for the inestimable boon the thanks of the young and the blessings of the old, who are past all other services but prayers for the prosperity of their country and blessings to those who promote it.

Th: Jefferson.

Joseph C. Cabell, Esq.
earlier in the same letter...

...the children of these three years (which are those that ought to be devoted to the elementary schools,) will be a constant number of 40; about enough to occupy one teacher constantly. His wages of $150, partitioned on these 40, make their teaching cost $3\frac{1}{2}$ a piece, annually. If we reckon the heads of families in a ward as there are militiamen, the unmarried militia men balancing in on the male (if levied equally) would be $2.24$ on each. At the same time the property tax on the ward being $5,000 \div 12$, or $416$, and that again subdivided on 67 heads of families (if it were levied equally) would be $6.20$ on a family of middling circumstances, the tax which it now pays to the State. So that to $6.20$, the present State tax, the school tax would add $2.24$, which is about 36 cents to the dollar on one third to the present tax.

\[
\frac{5000}{12} = 416\frac{2}{3} \approx 417
\]
UVa should be a leader, not a follower.
UVa should do big things, not small things.
Doing **Big** Things in Open Education!

| UVa Coursera Courses | $150,000 |
Doing **Big** Things in Open Education!

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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<tr>
<td>Academic Division (2011-2012)</td>
<td>$1,360,000,000</td>
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<td>Undergraduate Tuition Paid</td>
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<td>Access UVa (2011-2012)</td>
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<td>Rice Hall</td>
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<td>Buyout cost to fire assistant football coaches last year</td>
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<tr>
<td><strong>UVa Coursera Courses</strong></td>
<td>$150,000</td>
</tr>
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UVa should be a force for social mobility and public good
(Modest/Uvacious) Proposal

Open (by default) Collab

University-Wide Hybrid Class
All Incoming Students
4th Year Discussion Leaders
Team of Faculty and Producers

Every High School Student in Virginia should take UVa Classes for Admission and Credit
Support for infrastructure and teachers

Free or Very Low Cost
Real UVa Degrees
1M+ graduates/year
High rigor
Community Centers
Global Reach and Reputation