Role and Future of Computing at Universities: Building Capacity: Big+Wide+Deep

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Yes, They Are Coming In Front Door…

- At Illinois, this is the CS major in Engineering

Graph showing %Freshman Applications Fa16 by ENGIN Major UIUC.
“Sub Optimal” Institutional Responses

Can’t ignore it.
Can’t hope it just goes away.
Can’t just say “No, sorry…."
Must build capacity to respond aggressively.
Better Response: Become a Hub For...

Compute + Data

- Science
- Business/Law
- Health, Med
- Humanities
- Social Sci
- Art / Design
- Societal
Response the First: Go BIG

More Illinois CS Majors

- English
- Psychology
- Physics
- Economics
- ECE
- Chemistry
- Computer Science
- Math

More Illinois CS Classes & Seats for EVERYBODY

½ CS Majors
¼ Engineers
¼ Everybody Else

Instructional Units ‘14-15
“It’s technology married with liberal arts, married with the humanities, that yields the results that make our heart sing.”

Steve Jobs
They are *not*: Minor in CS/X. Dual degree.

They are: \(\text{CS}(1/2) + \text{X}(1/2) = \text{Bachelors Degree in X}\)
Legacy degrees, decades old

Design started in 2010, approved 2013, admits 2014

CS+Math

CS+Statistics

CS+Anthropology

CS+Astronomy

CS+Chemistry

CS+Linguistics

Fresh admit 2016
Soph admit 2015
Junior admit 2014
Next Year
Illinois CS+X: Traction

- Anthropology: ~11% of students
- Astronomy: ~25% of students
- Linguistics: ~28% of students
- Statistics: ~36% of students

Legend: +X
Illinois CS+X: Rising Popularity

- Dramatic surge of interest “to be next X”
- Likely pivoting toward more {CS+DataSci}+X

Next 3 X’s

- CS+Advertising
- CS+Music
- CS+Philosophy

In discussion

- CropSci
- Educat
- Economics
- English
- Art/Design
- Business
- GeoScience
Positive pressure

Negative pressure

The Morbid Fascination With the Death of the Humanities

Why professors, librarians, and politicians are shunning liberal arts in the name of STEM

Illinois CS+X: Today’s Numbers

- CS+X approaching 30% of all CS
- CS+X approaching 50% of admitted Freshman ‘16 class
- CS+X new degrees now 28% female

Total CS Enrollment

- 29% CS
- 71% CS+X

Freshman 2016 Enrollment

- 45% CS
- 55% CS+X
Response the Third: Go DEEP

- **Deep = Distant.** Access for folks **not local to campus**
  - **Coursera** is one of the large **MOOC** platform providers
  - Illinois is currently Coursera’s largest academic partner
  - **Computer Science MOOCs** are a huge, strategic part of partnership

903,370 registered in CS@Illinois MOOCs
(2.6M total at UIUC)
Computing Enrollments: Build Capacity

Go WIDE:
+X +X +X +X +X

Go DEEP:
MOOC MOOC MOOC MOOC MOOC

Go BIG: For CS Majors