Lecture 34

Case Study: Education

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Announcements
Tutoring in Computer Science
# Small-Group Tutoring at Scale

## Fall 2017 small-group mentoring/tutoring (CS Mentors & course tutors)

<table>
<thead>
<tr>
<th>Course</th>
<th>CS 61A</th>
<th>Data 8</th>
<th>CS 61B</th>
<th>CS 70</th>
<th>EE 16A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic</strong></td>
<td>Program structures</td>
<td>Foundations of data science</td>
<td>Data structures</td>
<td>Discrete math &amp; probability</td>
<td>Linear algebra &amp; circuits</td>
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<tr>
<td><strong>Mentors</strong></td>
<td>84</td>
<td>31</td>
<td>51</td>
<td>25</td>
<td>9</td>
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<tr>
<td><strong>Sections</strong></td>
<td>140</td>
<td>60</td>
<td>52</td>
<td>27</td>
<td>9</td>
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<tr>
<td><strong>Students</strong></td>
<td>587</td>
<td>261</td>
<td>160</td>
<td>156</td>
<td>45</td>
</tr>
</tbody>
</table>
Mentoring Schedule in CS 61A

September 14, 2017 — CS 61A Midterm 1
September 15, 2017 — Sign-ups for adjunct sections open
September 17, 2017 — CS 61A Midterm 1 scores returned
September 18, 2017 — Weekly adjunct sections start
October 19, 2017 — CS 61A Midterm 2

(Demo)
Hypothesis Test

- Null Hypothesis: The sampled improvements for mentored students and non-mentored students are drawn from the same population distribution.
- Alternative Hypothesis: The sampled improvements for mentored students come from a population distribution which has a larger average than the population distribution from which the sampled improvements for non-mentored students came from.
- Test Statistic: Average Improvement for Mentored Students - Average Improvement for Non-Mentored Students
  - Improvement: Score - what was predicted if the student was not mentored
  - Large values point towards the alternative.
Estimation

- Interested in finding the true population average improvement for mentored students
- Bootstrap our sample many times
  - Each time, compute the average improvement
  - Keep track of these averages
- Take the inner-95% of our data as a 95% confidence interval

(Demo)