# Visualizing Data from a MOOC

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## Problem

- Visualizing course data from a PL Coursera class.
- Compare statistics across two offerings.
- Provide insights into the data that are valuable to instructors

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```
fun append (xs, ys) =
    if null xs
    then ys
    else (hd xs):: append (tl xs, ys)

fun map (f, xs) =
    case xs of
        [] => []
      | x :: xs' => (f x)::(map (f, xs'))

val a = map (increment, [4,8,12,16])
val b = map (hd, [[8,6],[7,5],[3,0,9]])
```

## Motivation

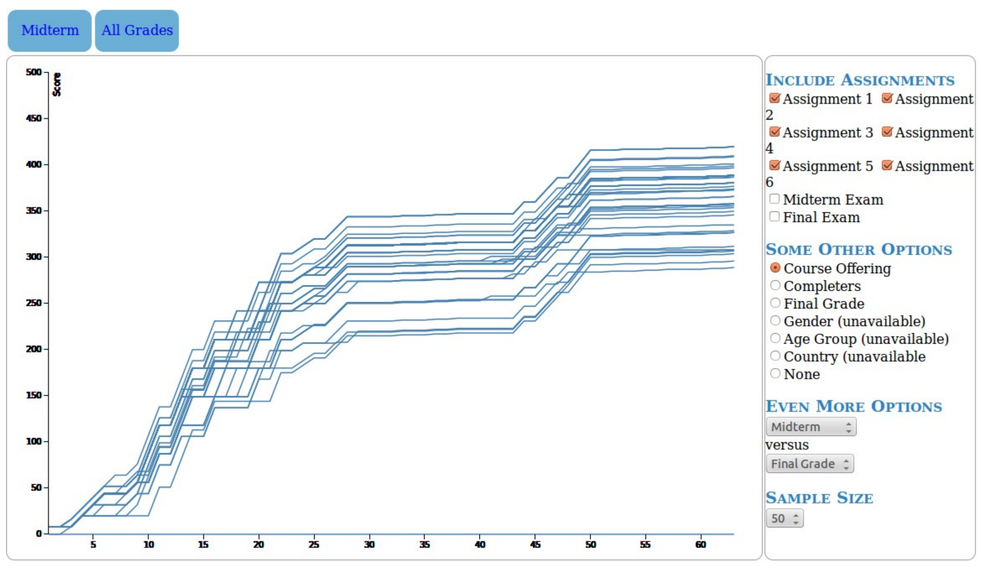
**Emerging trends**

- Open on-line courses are becoming more popular.
- Enrollment number increases every year.

**Need to understand the data**

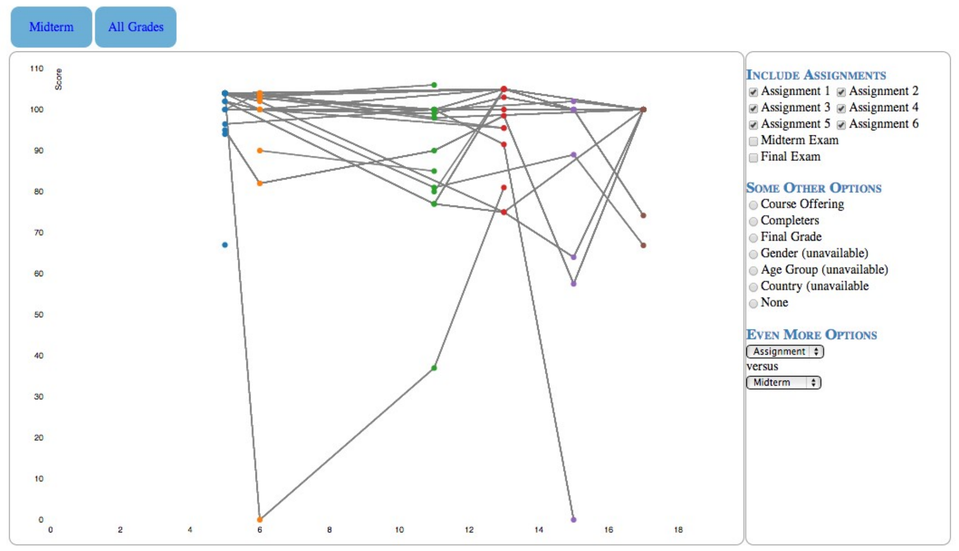
- Massive fine-grained course data.
- No existing software/framework specialized in this domain.
- High demand from instructors for visualization tools.

## Exam Track




- Slope indicates difficulty levels
- Clustering may indicate common misunderstandings

## Grades




- Instant view comparing how students are trending
- Options to zoom in by filtering by assignment

## Approach

**Correlation between statistics**

- K-means algorithm to find best predictor of final grades

**Comparison across offerings**

- Color coded lines/bars for easy comparisons.
- Clustering of individual statistics into bands to remove outlying data

**Rich set of visualization options**

- Compare across course offerings
- Determine drop-rate in course participation

## Future Work

**Incorporation of Demographics**

- Filter performance by background, age group, gender, country of origin etc (privacy preserving)

**Survey Instructors for Feedback**

- Determine what elements are commonly included in Coursera offerings
- Discover what insights and trends they would like to be able to visualize

**Integration with Coursera Website**

- Make visualizations available by default to instructors via Coursera or CSV upload