



VisCap: A Tool for Visualization of Chinese Ancient Capitals

CPSC 533C Course Project Update Presentation

Ellsworth Shi
Jingxian Li
2011/11/16

Why?

- Chinese history is long and complex and it deserves to be more carefully studied, not only for foreigners but for Chinese people too!
- High level of centralization, a capital means a lot to the whole country!
- No previous work before!
- We are really interested in this topic!

What?

- Chinese ancient capitals
- A range of about three thousand years (1046 B.C. ~ 1840 A.D.)



What? (Dataset)

- Wikipedia
- Start from 1046 B.C. to 1840 A.D.
- A total of 244 entries
- Pre-processed heavily
 - Lots of missing data, especially before 1 A.D.
 - Lots of uncertain data
 - History is subjective

What? (Attributes)

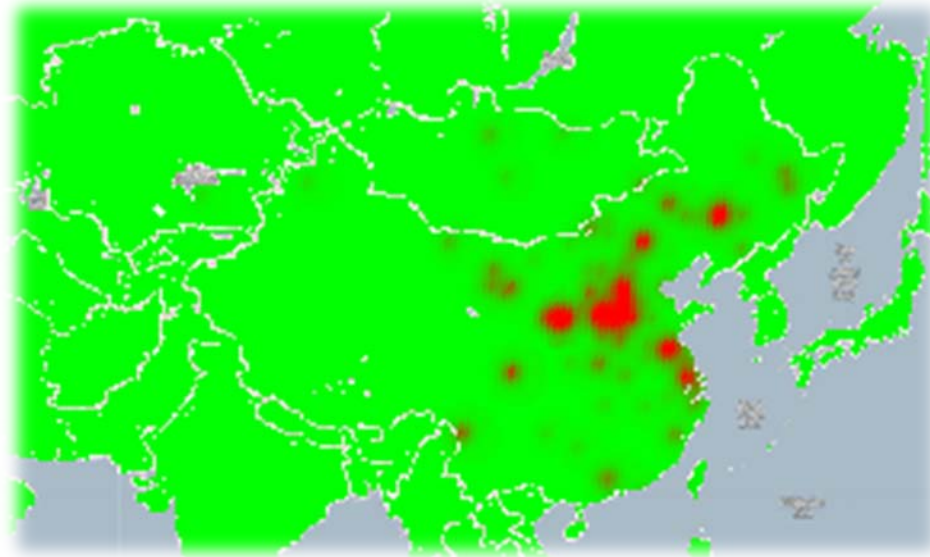
- Name, time, location, dynasty, ethnic group, scope, relationship
 - Linzi (now Zibo)
 - 386 B.C. ~221 B.C.
 - $36^{\circ} 48' N, 118^{\circ} 03' E$
 - Qi
 - Han
 - Regional
 - Conquered by Qin

What? (Exploration)

- Geographical distribution of capitals at one time point or during a time range

What? (Exploration)

- Accumulative geographical distribution of capitals during a time range



1046 B.C. ~ 1840 A.D.

What? (Exploration)

- Comparison of capital densities between different geographical regions in a time range
- E.x.: during 770 B.C. to 670 B.C., there were 11 capitals located at the Yellow River area; while the number of capitals at the Yangzi River area was 3.

What? (Exploration)

- Comparison of different cities in terms of number of dynasties choosing it as a capital, time range when it was a capital and its distribution pattern

What? (Exploration)

Beijing

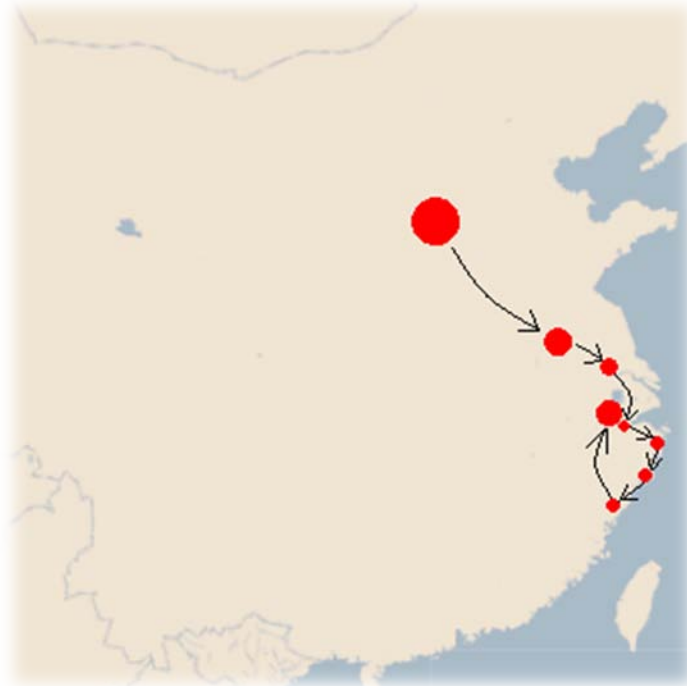
770 B.C.~226 B.C.
352 A.D.~357 A.D.
911 A.D.~913 A.D.
1122 A.D.~1123 A.D.
1153 A.D.~1214 A.D.
1276 A.D.~1368 A.D.
1421 A.D.~1424 A.D.
1441 A.D.~1644 A.D.
1644 A.D.~1644 A.D.
1644 A.D.~1840 A.D.

Xi'an

202 B.C.~200 B.C.
200 B.C.~8 A.D.
8 A.D.~23 A.D.
24 A.D.~25 A.D.
191 A.D.~195 A.D.
313 A.D.~316 A.D.
319 A.D.~328 A.D.
351 A.D.~394 A.D.
386 A.D.~417 A.D.
418 A.D.~418 A.D.
535 A.D.~557 A.D.
557 A.D.~581 A.D.
582 A.D.~584 A.D.
585 A.D.~604 A.D.
618 A.D.~684 A.D.
705 A.D.~904 A.D.
1644 A.D.~1644 A.D.
1644 A.D.~1645 A.D.

What? (Exploration)

- The trend of a dynasty moving its capitals
 - How to represent the time range?
 - Animation?
 - Static image?

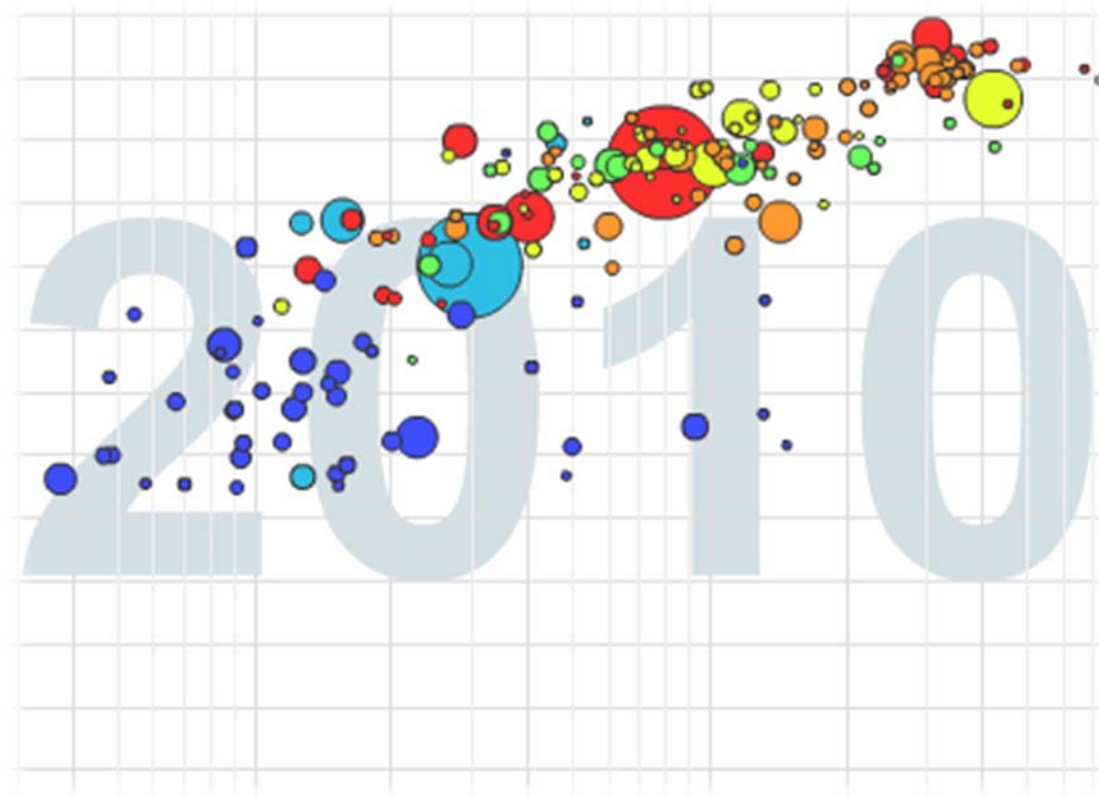


How? (Visual encoding)

- Capital: color (hue), text label
- How many colors?

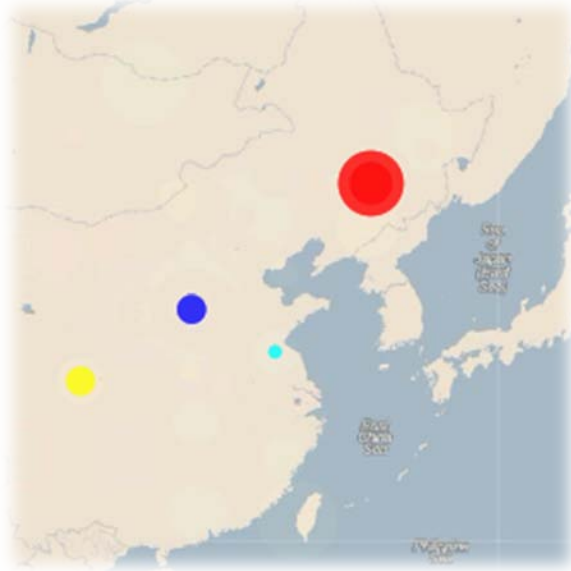


How? (Visual encoding)



How? (Visual encoding)

- Time (Impact): size



How? (Visual encoding)

- What is the function between time and size?



How? (Visual encoding)

- Location
- Dynasty: text label

How? (Visual encoding)

- Scope: ring



National capital



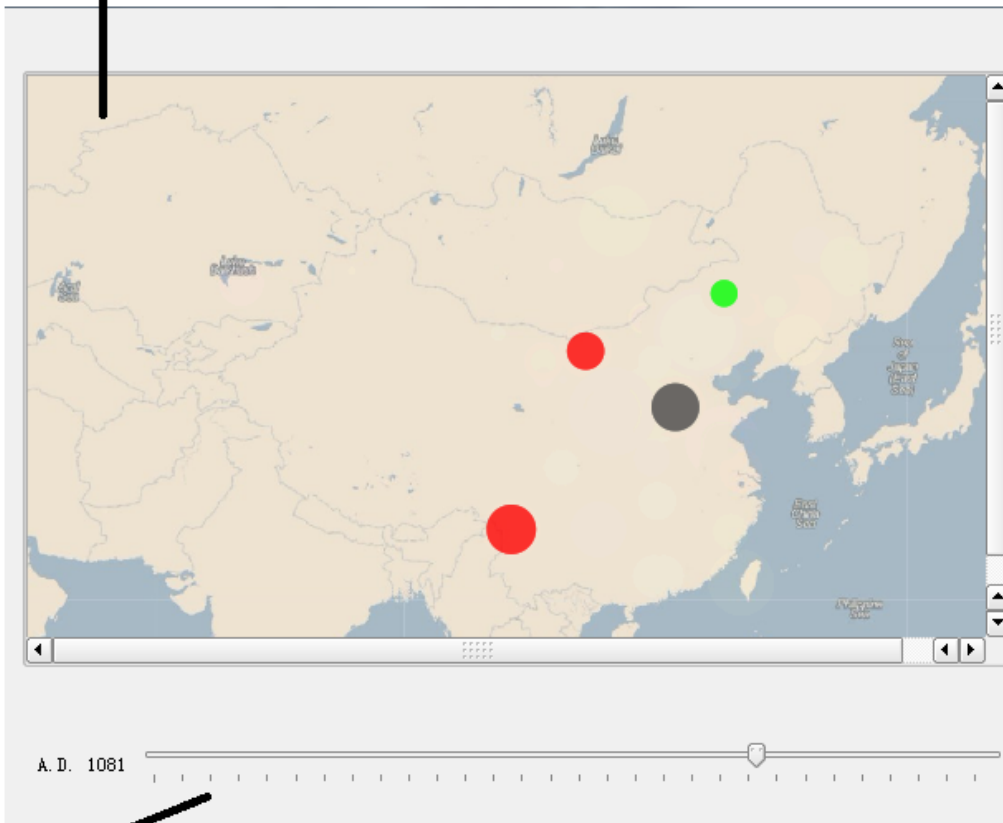
Regional capital

How? (Visual encoding)

- Ethnical group?
 - *Shape?*
 - *Saturation?*

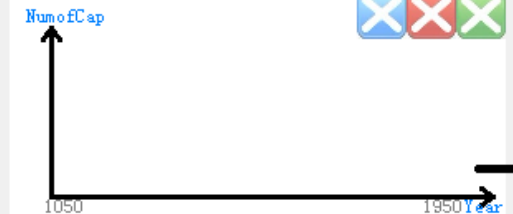
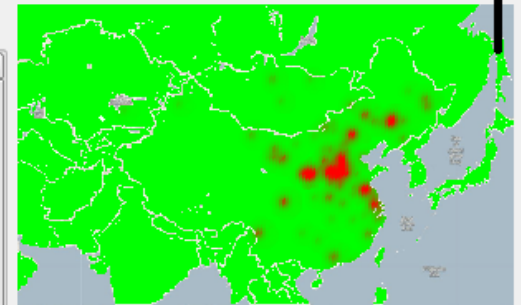
How? (Interface components)

Main panel



Time slider

2D histogram panel



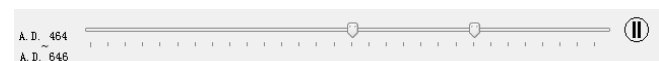
City comparison panel



Region comparison panel

How? (Interaction approaches)

- Time slider and main panel
 - Capital distribution at a time point
 - Capital distribution during a time period



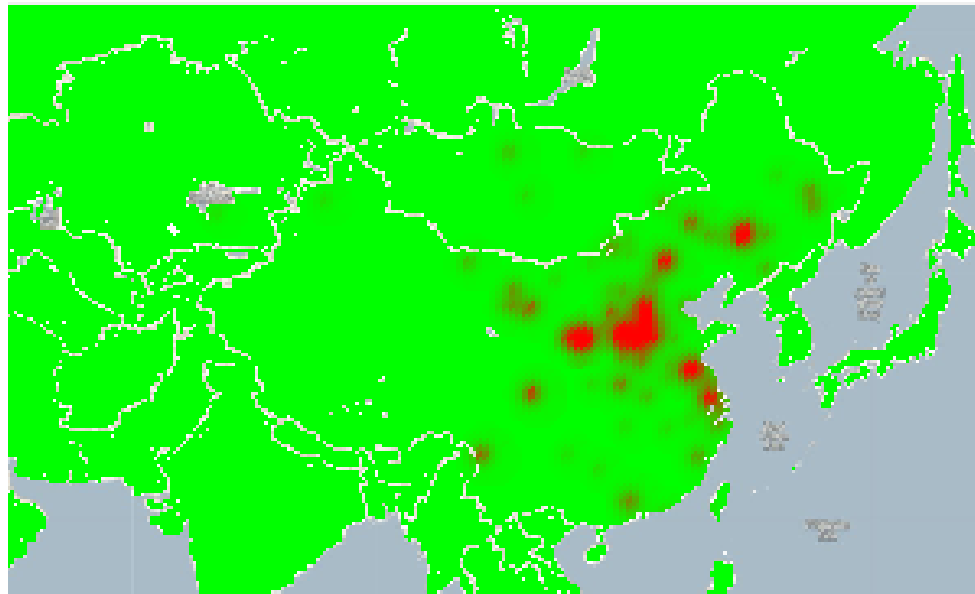
How? (Interaction approaches)

- Obtain text information



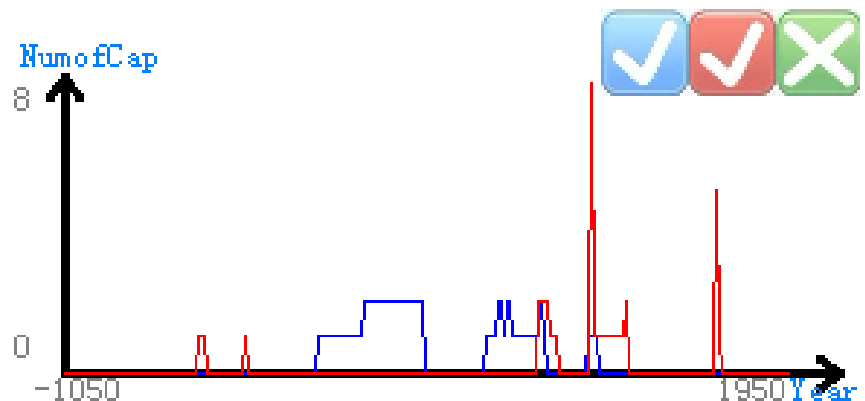
How? (Interaction approaches)

- *Time slider and 2D histogram panel*
 - *Select a time range in time slider*
 - *Show capital distribution against the background depicting all capitals across the whole time range*



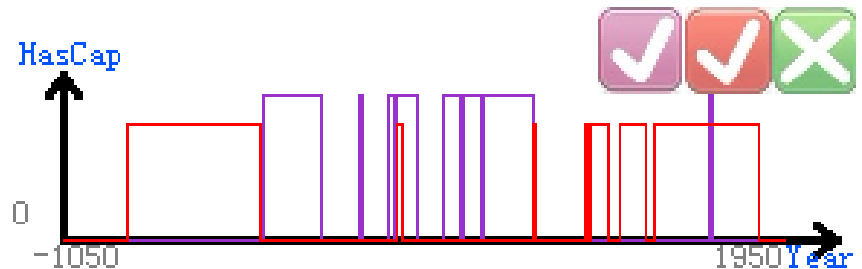
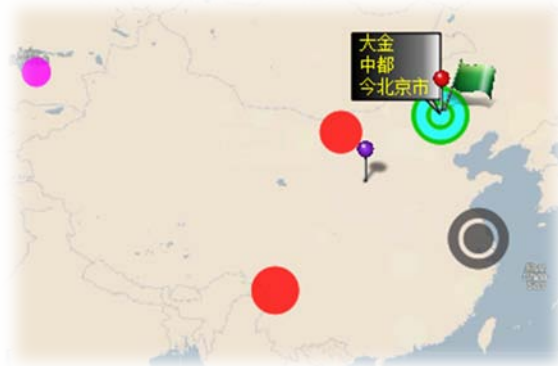
How? (Interaction approaches)

- Region comparison panel
 - Select different areas in the main panel;
 - Show histogram of number of capitals;
 - *Translate, zoom in or out to see information during a detailed time range*



How? (Interaction approaches)

- Capital comparison panel
 - Select different capitals in the main panel;
 - Compare distributions of time range when the cities are capital;



Other work remains to be done

- How to represent relationship?



Demonstration



Q&A



Thank you!