Visual Analysis for Human Relationships in Joseon Dynasty

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Introduction

- History is a filed which empirically examines historical records in order to understand facts and relationships between cause and effect.

- Visual analysis can enable users to better understand data by automatically analyzing and visualizing the data.

Introduction

- First, it shortens time to learn historical records by its automated method.

- Second, Visualized system can help users to understand the results more effectively.
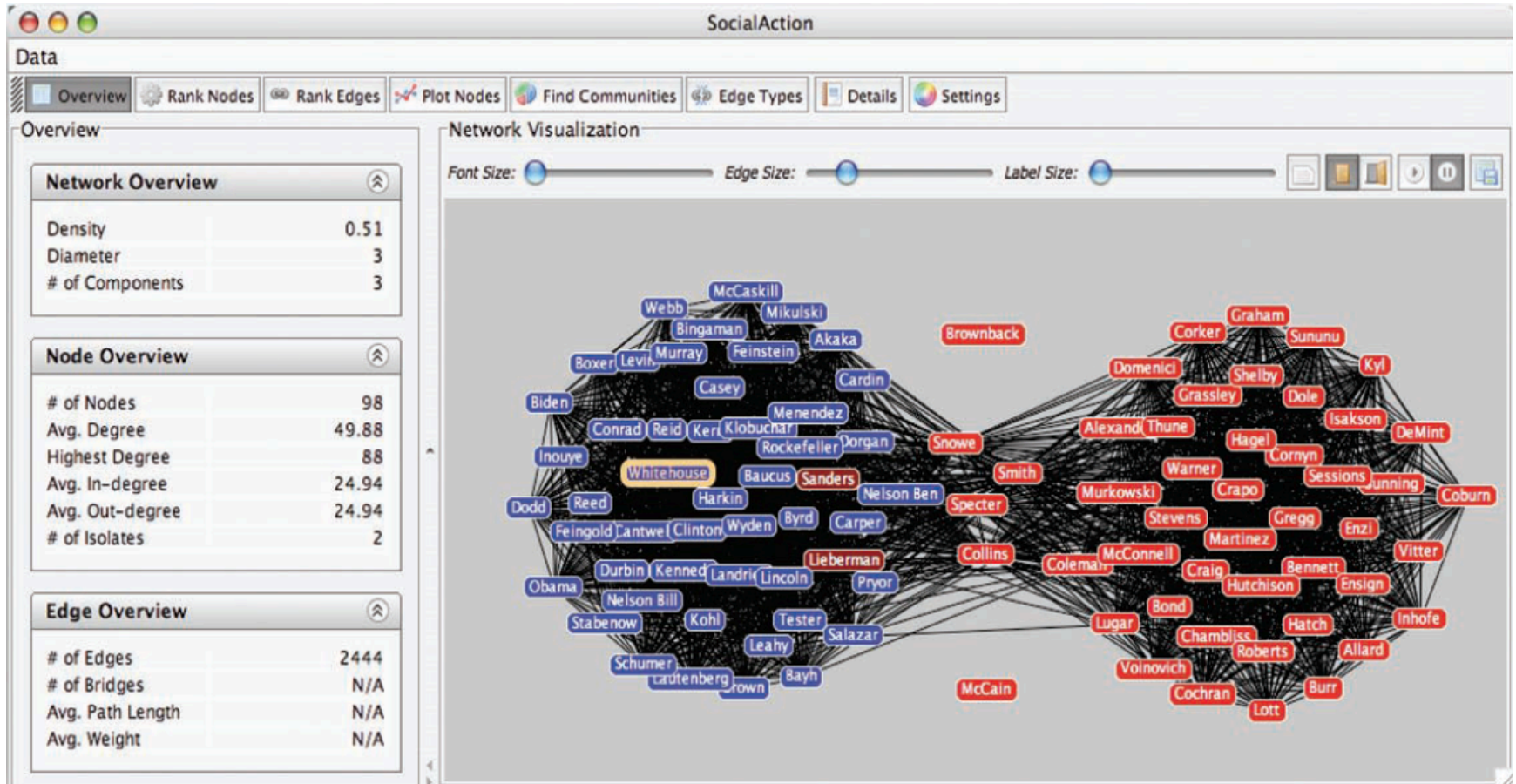
Purpose and Background

- Human relationships in modern society share certain characteristics with in pre-modern period.

- We aim to discover the factors affecting human relationships in Joseon dynasty by analyzing historical records in pre-modern period.

Related Work

Adam Perer, Ben Shneiderman,"Integrating Statistics and Visualization: Case Studies of Gaining Clarity during Exploratory Data Analysis", CHI 2008 Proceedings · Visual Synthesis, pp. 265-274, 2008.

Annals of the Joseon Dynasty

- The Annals of the Joseon Dynasty are the annual records of the Joseon Dynasty of Korea.

Preprocessing

- In human relationship data, People who agree with a issue are represented in 1, have no idea in 0, disagree in -1.

순번	ID	성	명	Fullnam	관직	관품	사건1-	사건1-	사건1-	사건1-	사건1-	사건2
1		하	연	**하연**	영의정부사	1	-1	-1	1	1	1	0
2		허	후	**허후**	예조판서	2	-1	-1	1	1	1	0
3		이	선제	**이선제**	동지춘추관사	2	-1	-1	1	1	1	0
4		정	척	**정척**	예조참판	2	-1	-1	1	1	1	0
5		김	종서	**김종서**	좌찬성	1	0	0	1	1	1	0
6		정	갑손	**정갑손**	좌참찬	2	1	1	1	1	1	0
7		신	석조	**신석조**	집현전부제학	3	1	1	1	1	1	0
8		노	숙동	**노숙동**	직제학	3	1	1	1	1	1	0
9	1686	이	석형	**이석형**	직협전직제학	3	1	1	1	1	1	0
10		김	예몽	**김예몽**	응교	4	1	1	1	1	1	0
11		이	개	**이개**	교리	5	1	1	1	1	1	1
12		유	성원	**유성원**	수찬	6	1	1	1	1	1	0
13	6267	이	극감	**이극감**	수찬	6	1	1	1	1	1	0
14	4671	서	거정	**서거정**	수찬	6	1	1	1	1	1	0

User Tasks and Design Objectives

- **Task 1:** Calculating the similarity between each figure and Geojeong Seo in each agenda.

- **Design Objective:** We should create an axis that indicates similarity levels as to mark the relationships on it.

$$\Phi coefficient = \Phi = \frac{n_{11}n_{00} - n_{10}n_{01}}{\sqrt{n_1 * n_0 * n_0 * n_1}}$$

User Tasks and Design Objectives

- **Task 2:** Classifying agenda to present human relationships in specific categories.

- **Design Objective:** Users should be able to select each classification and human relationships will be changed according to each category.

User Tasks and Design Objectives

- **Task 3:** Presenting figures based on the blood relationship and degree of kinship.

- **Design Objective:** We need to visually distinguish relationships between people who have blood relationship or not.

Function of Visualization

- **Task 1:** Calculating the similarity between each figure and Geojeong Seo in each agenda.
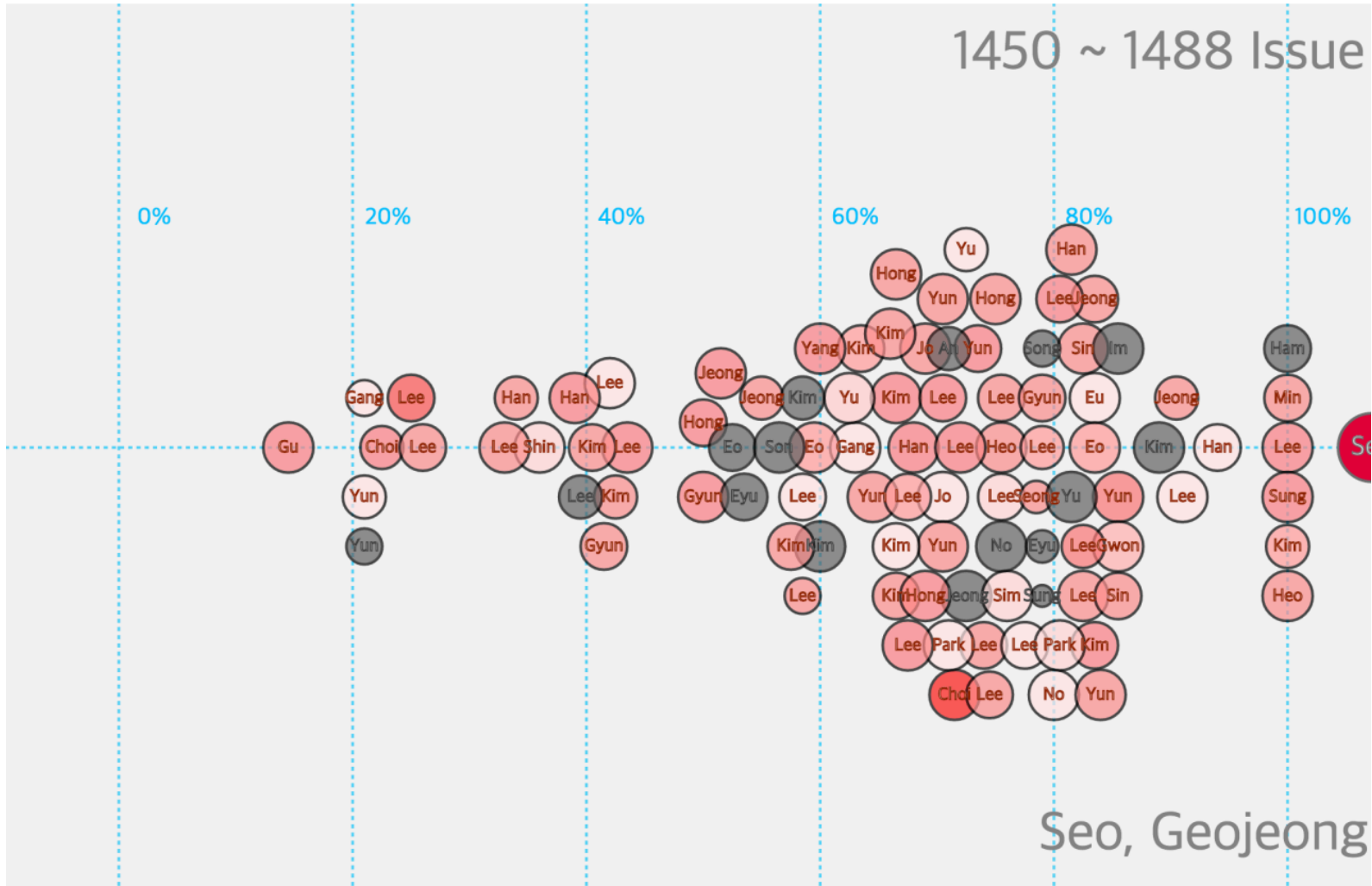
Function of Visualization

- **Task 2:** Classifying agenda to present human relationships in specific categories.
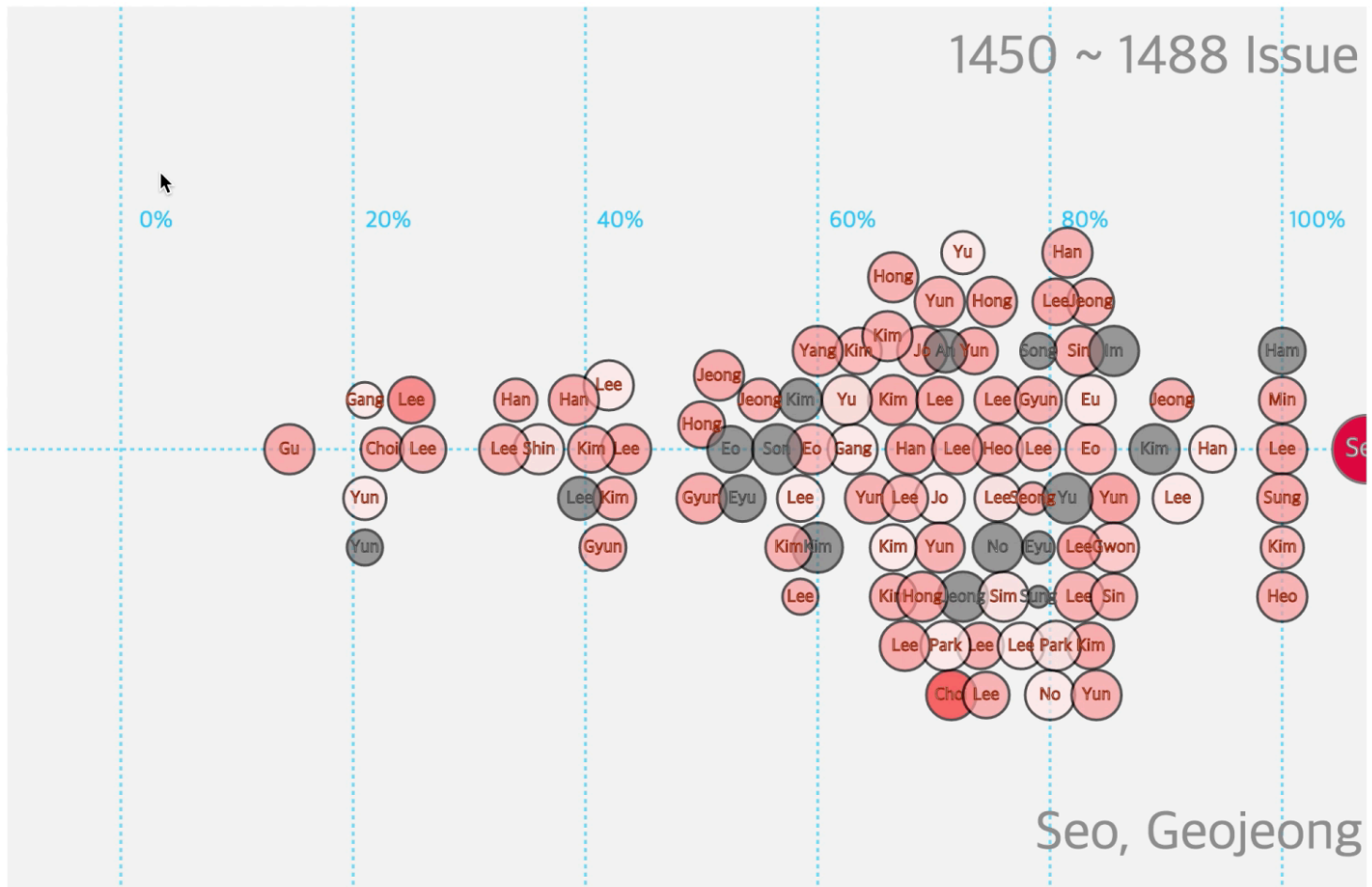
Function of Visualization

- **Task 3:** Presenting figures based on the blood relationship and degree of kinship.
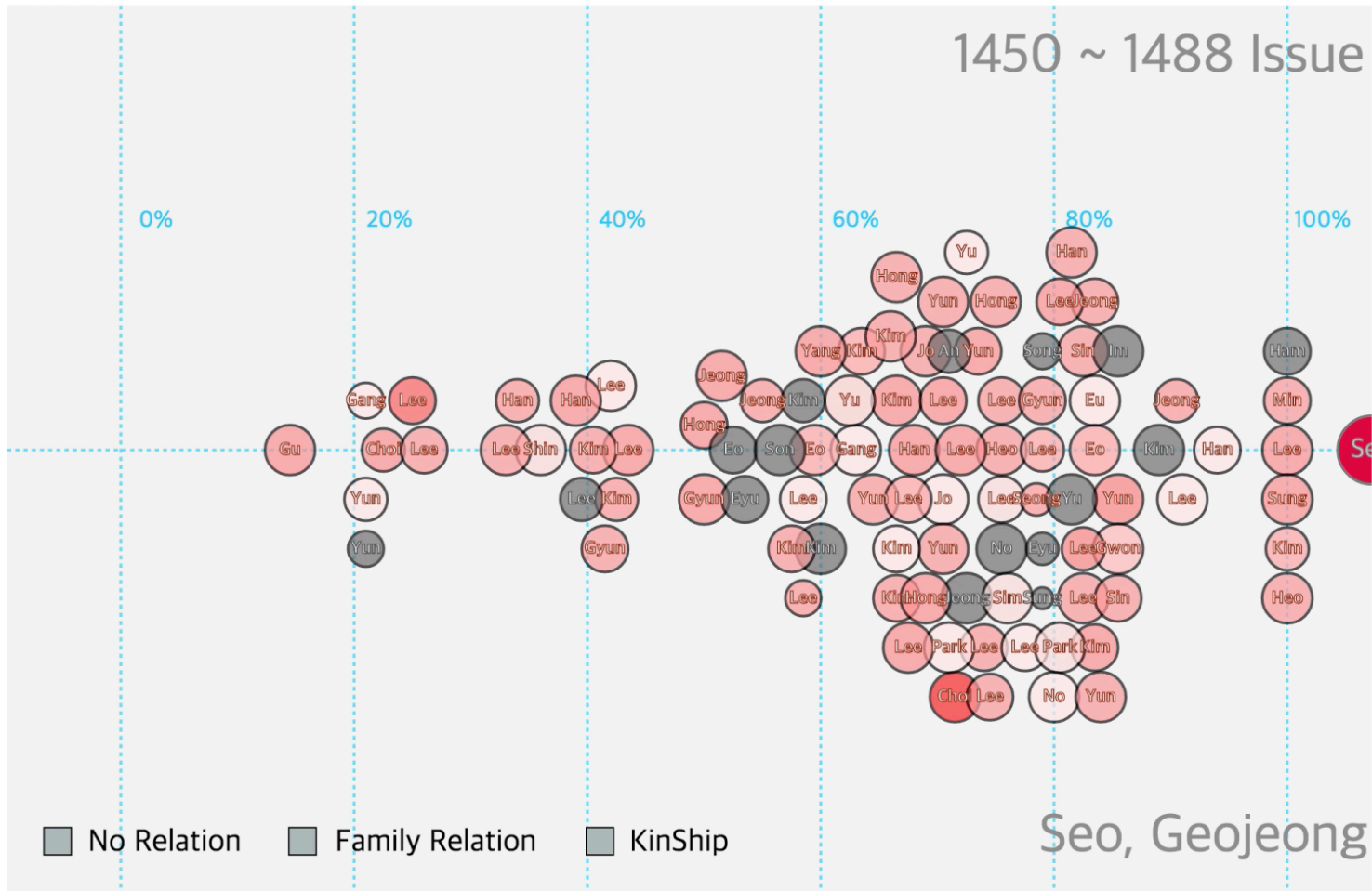
Function of Visualization
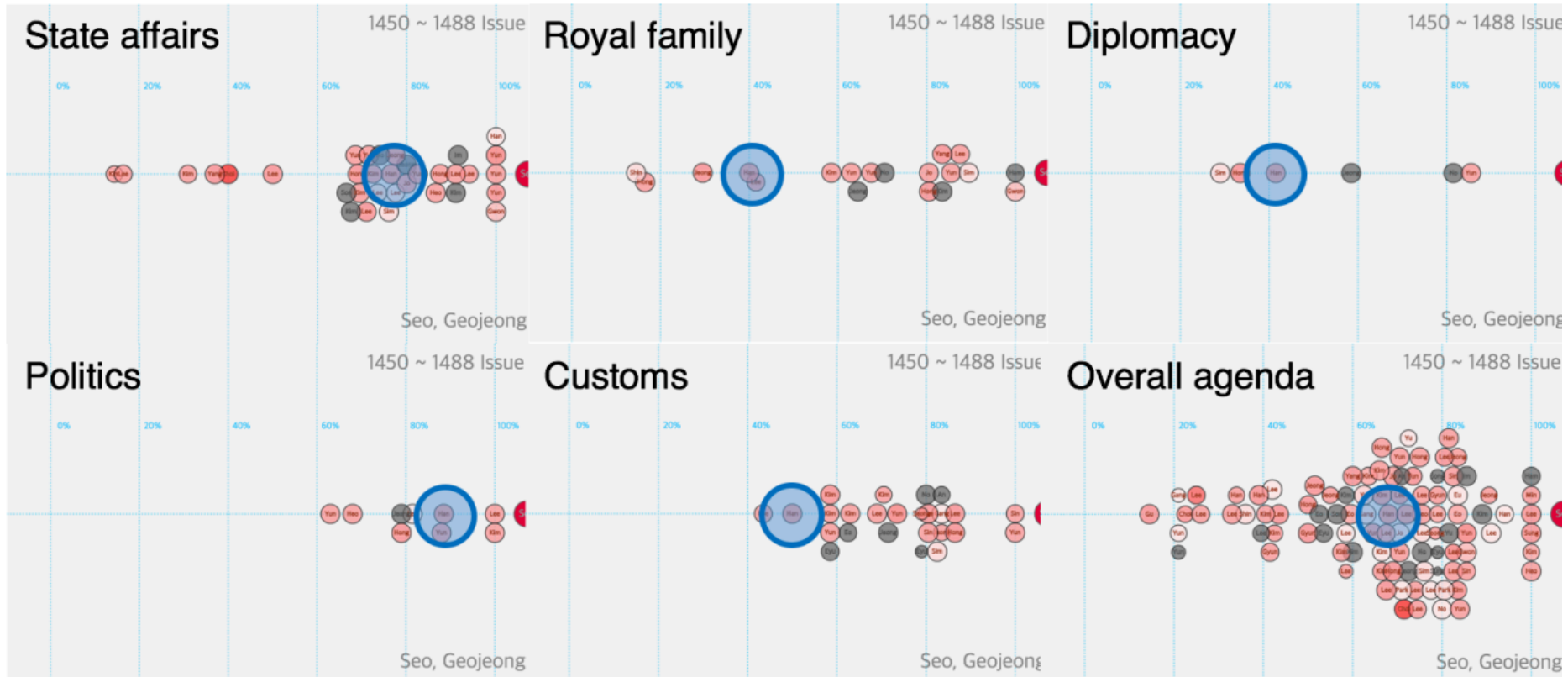
- Other function of visualization.
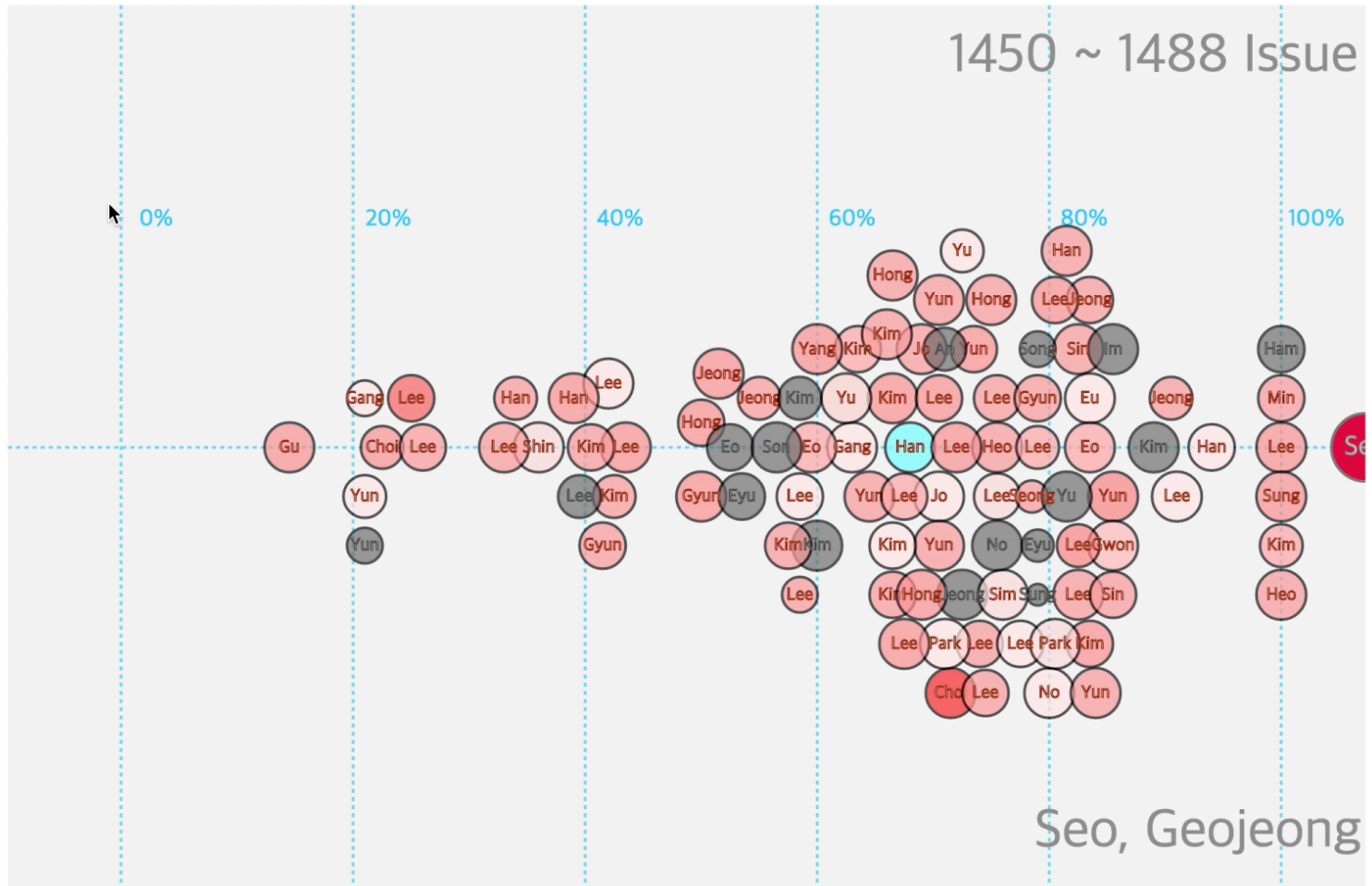
Scenario for the Visual Analysis

- **Scenario 1:** Is there a difference in voting patterns if the nature of agenda changes?
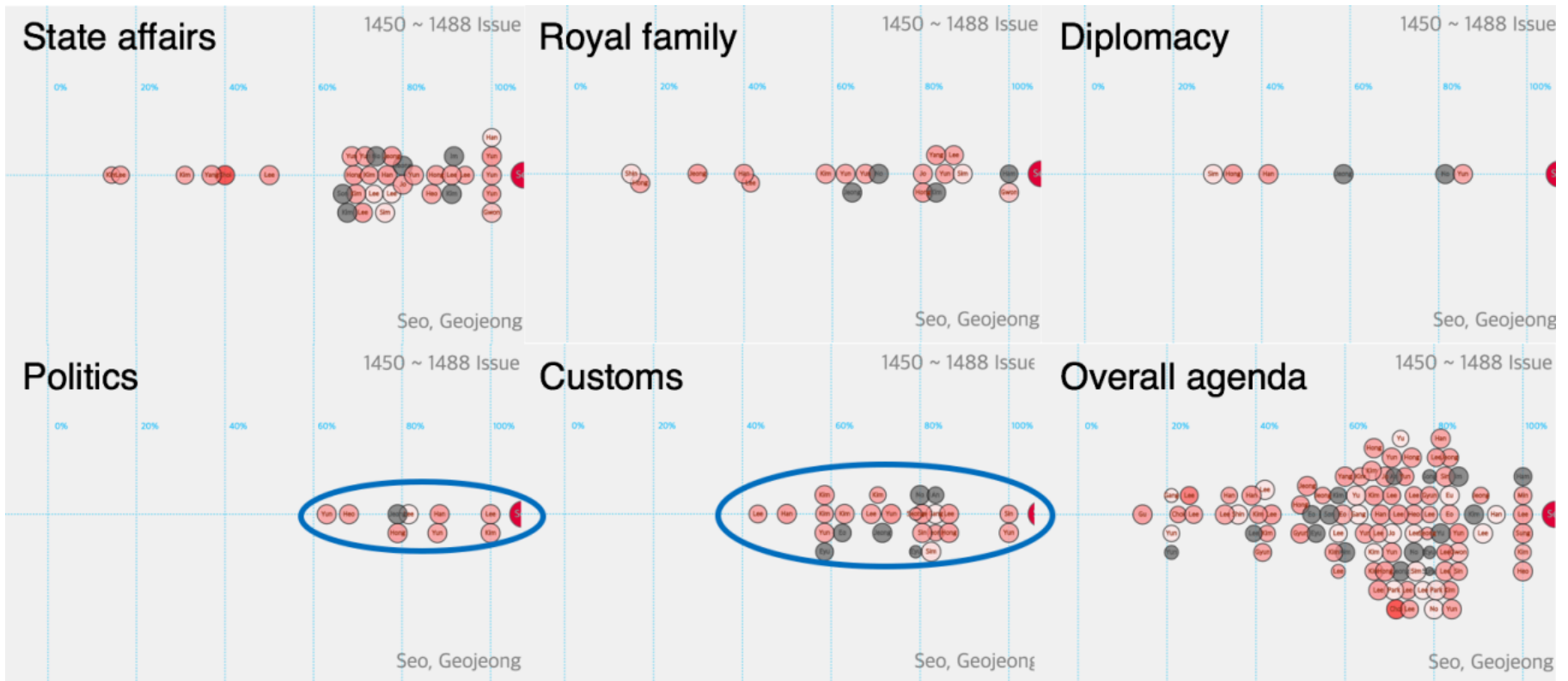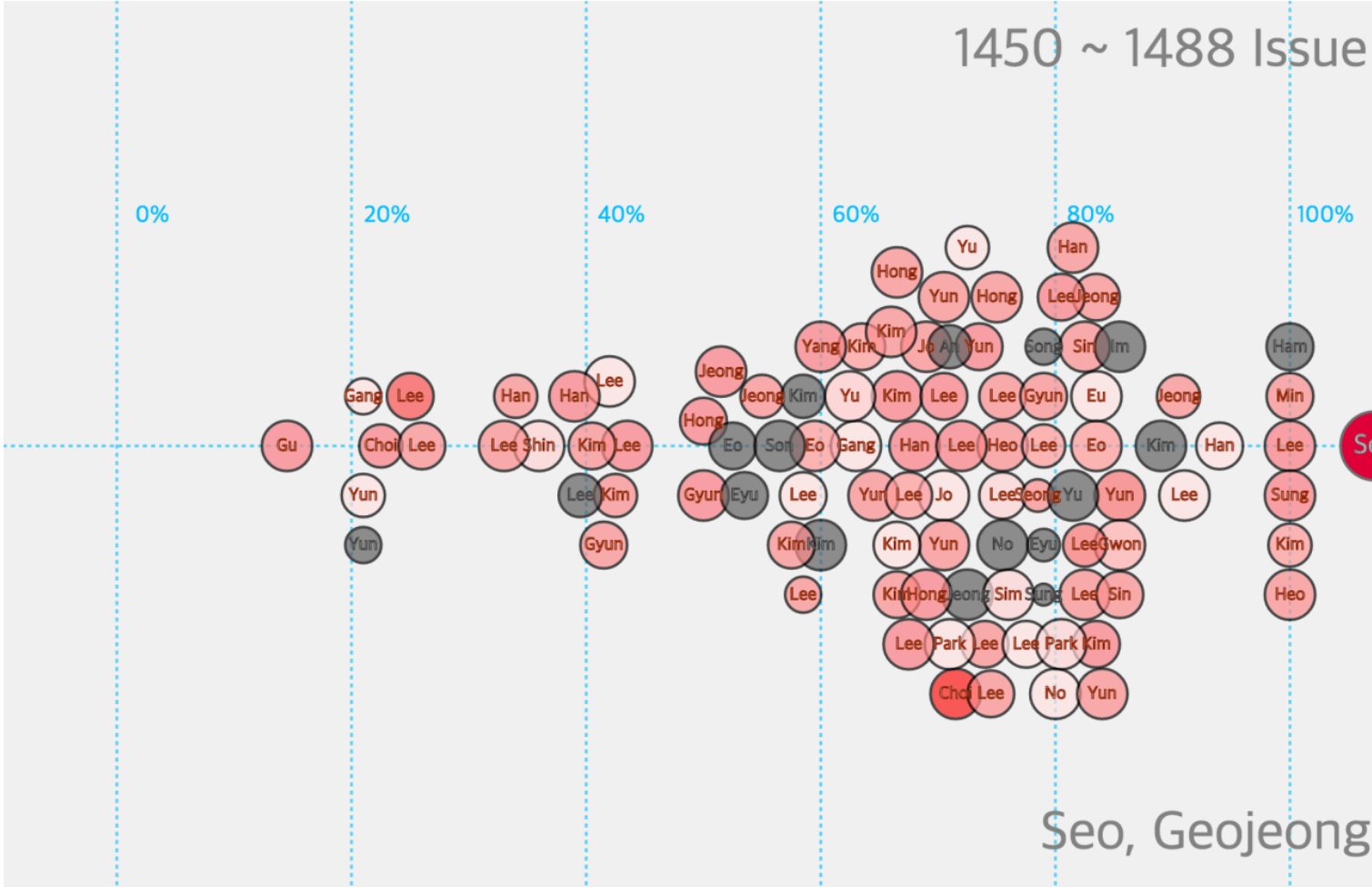
Scenario for the Visual Analysis

- **Scenario 2 :** Will an individual show different voting patterns if the nature of agenda changes?

Scenario for the Visual Analysis

- **Scenario 3 :** Will kinship affect the similarity level in voting patterns?

Research Conclusion

- First, historical events can be classified into five categories, and the opinions on each agenda will vary according to the nature of agendas.

- Second, each figure indicate different opinions in different sets of agendas.

- Third, blood relationship cannot be affected the similarity level of voting patterns.

Demonstration

- http://202.30.24.167:3007/SSHA2016