

RecipeScape: Mining and Analyzing Diverse Processes in Cooking Recipes

Minsuk Chang ¹, Vivian Hare ², Juho Kim ¹, Maneesh Agrawala ²

KAIST School of Computing ¹

Stanford ENGINEERING Computer Science ²

Kixlab
KAIST INTERACTION LAB
minsuk@cs.kaist.ac.kr

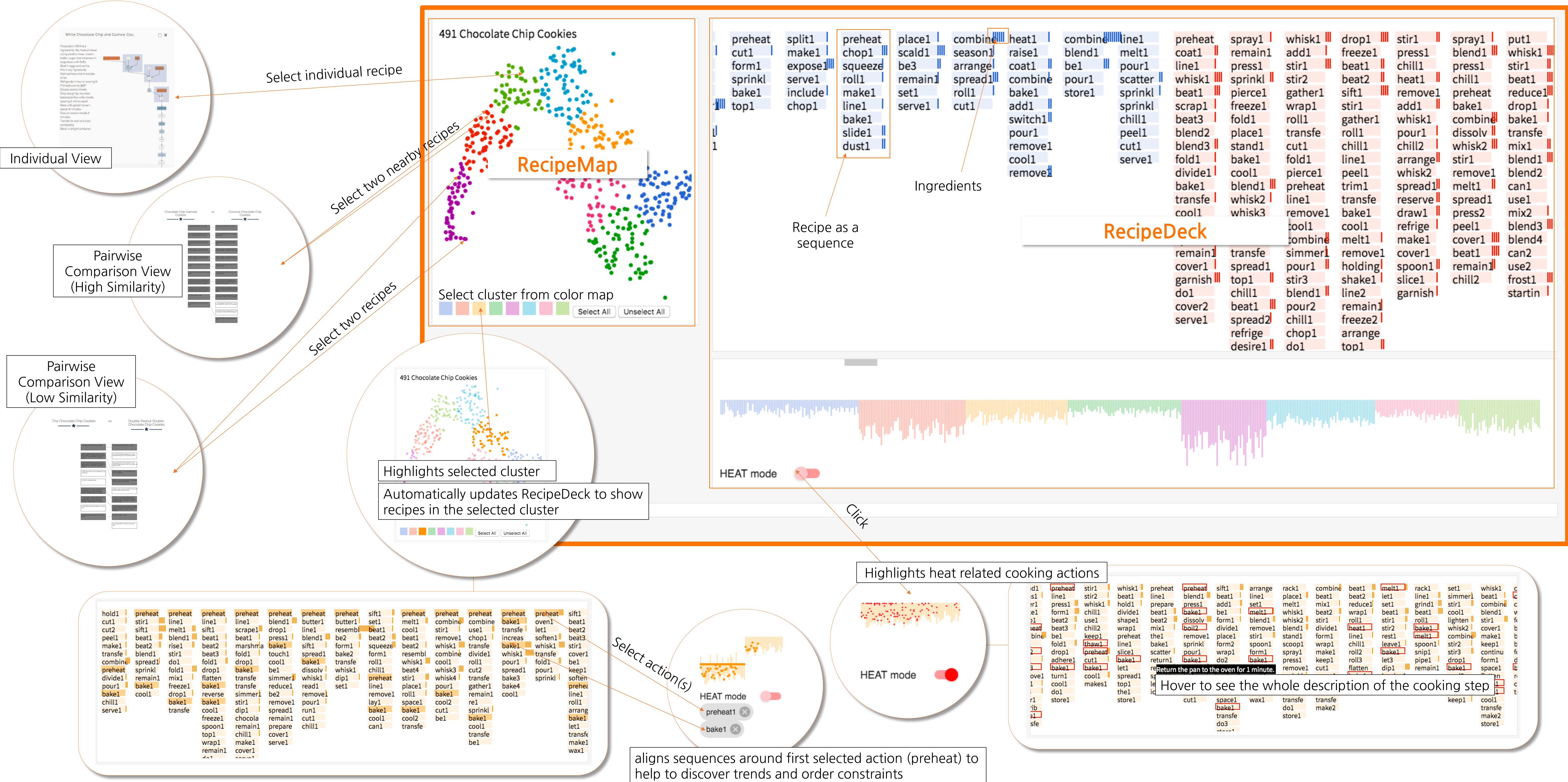
Background and Motivation

- Cultural analytics: what are salient characteristics of collective human behavior?
- Recipe sharing online: thousands of recipes by people even for a single dish
→ naturally crowdsourced human collective knowledge in procedural forms!
- Current recipe analytics only focus on ingredient level
→ we propose a new perspective, “Recipe = Process”
- We introduce **RecipeScape**, a prototype interface which supports visually querying, browsing and comparing cooking recipes at scale.

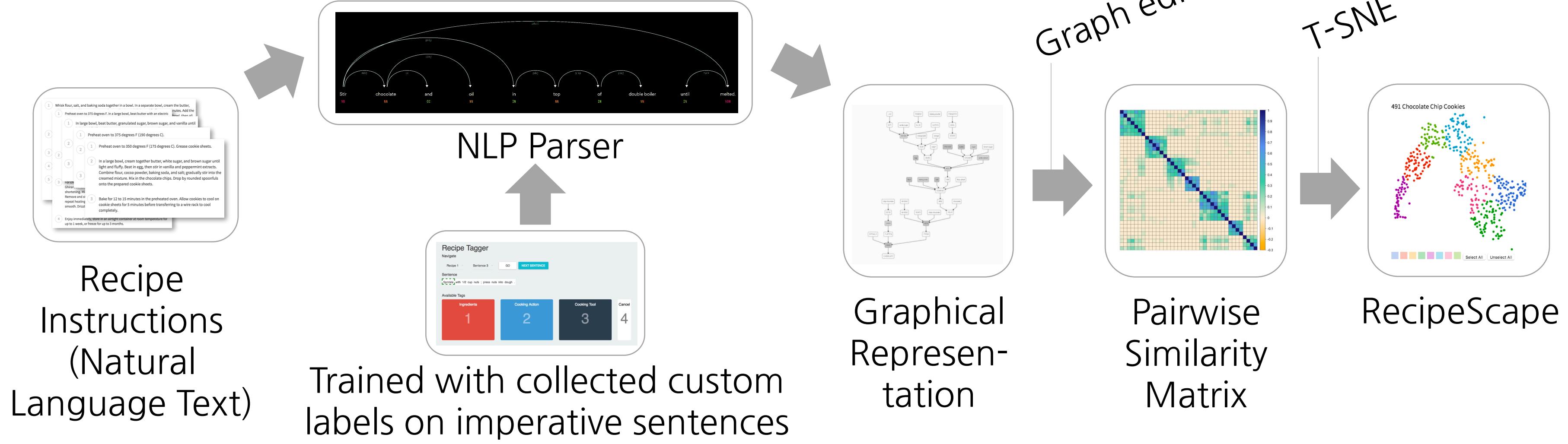
What can we learn from analyzing the embedded processes at scale for a single dish, e.g. ?

- Average recipe? Creative variants or outliers?
→ RecipeMap → Overall Distribution
- Clusters of fundamentally different ways of making a cookie?
→ RecipeMap → Clusters
- Simplest vs most complex recipe?
→ RecipeMap → Individual Recipe View
- Common vs uncommon cooking action?
→ RecipeDeck → Action Selection
- Ordering constraints of different cooking actions?
→ RecipeDeck → (Multiple) Action Selection
- What cooking action(s) makes a cookie a cookie?
→ RecipeDeck → Action Selection

RecipeScape Prototype Interface



Computational Pipeline



Case Study Findings

- Able to find average recipe, outlier recipes, clusters of recipes from RecipeMap
- Able to find common, uncommon cooking actions from RecipeDeck
- Cooking actions with high dependency & strict order constraint → Preheat & Bake
- Cooking actions with high dependency & loose order constraint → Add & Stir, Mix & Stir

Vision and Future Directions

- RecipeScape: Recipe analytics tool
- Generalizable technique: Interesting and fun applications like makeup instructions, travel guides, path planning, and etc.
- Parser accuracy and different similarity metrics than edit distances
- Augment all recipes to support learning/cooking applications
- Video-based recipes: How-to-cook videos