

# Anything You Can Do, I Can Do Better: Finding Expert Teams by CrewScout

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## Motivation

Given a task that requires several different merits and objects with different scores on the merits, find a group of  $k$  objects with strong collective merits.

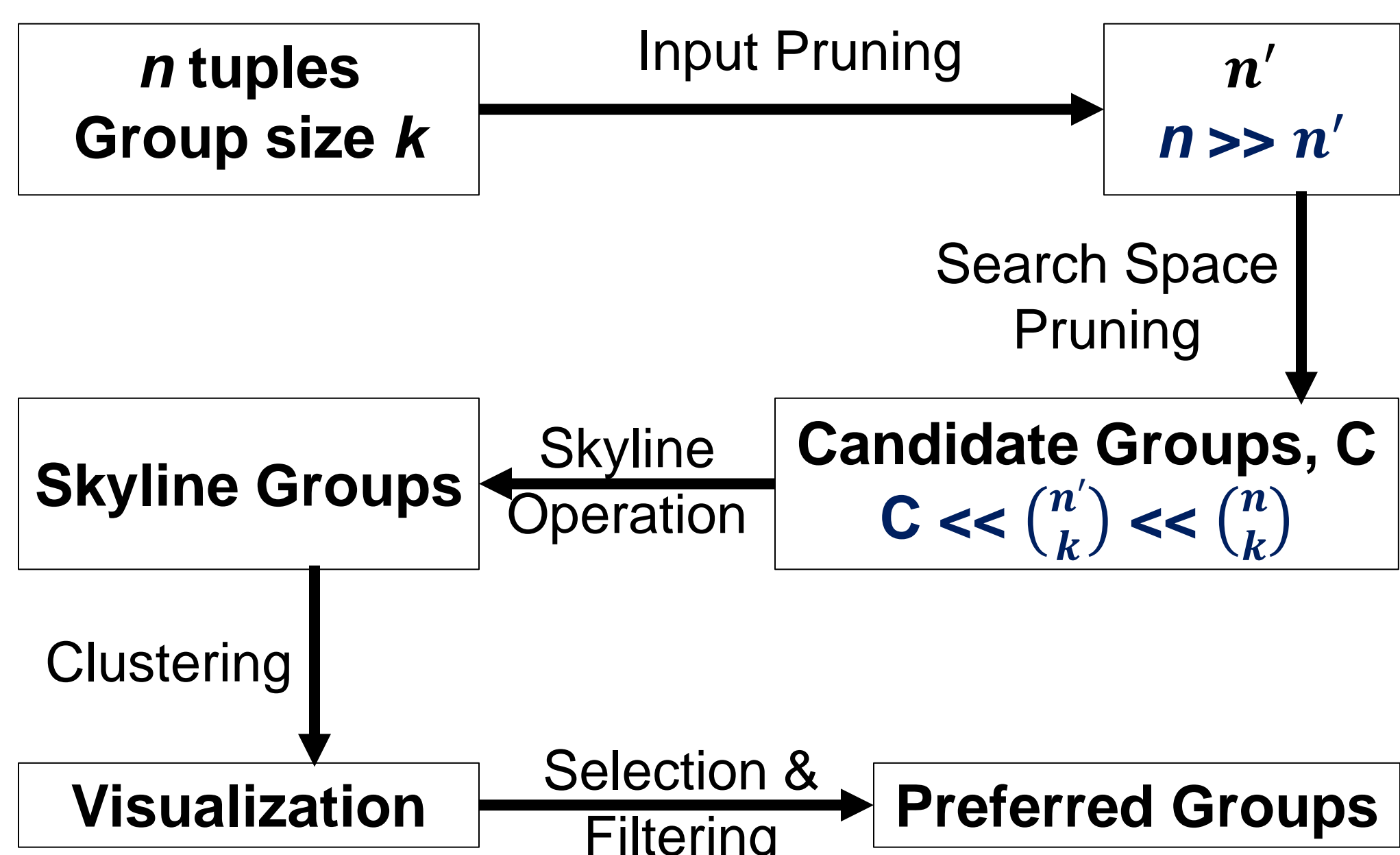
### Several Motivating Applications

- Crowdsourcing
- Question-Answering platforms
- Diverse product review selection
- Fantasy games
- Paper reviewer selection

## Challenges

- Huge number of candidate groups:  $\binom{n}{k}$
- Curse of Dimensionality may lead to many skyline groups
- Visualizing all the skyline groups
- Choosing preferred groups from many skyline groups

## System Framework



## Skyline Groups Problem

	Points	Assists	Blocks
$P_1$	30	14	5
$P_2$	40	12	3
$P_3$	40	15	3
$P_4$	20	11	2
$P_5$	40	11	2

Score of NBA players

### Input

D: { $P_1, P_2, P_3, P_4, P_5$ }

$k$ : 3

Aggregate function: AVG

### Skyline Groups

{ $P_1, P_2, P_3$ }, { $P_2, P_3, P_5$ }

Score of Groups

	AVG		
	Points	Assists	Blocks
$P_1, P_2, P_3$	37	13.7	3.7
$P_1, P_2, P_4$	30	12.3	3.3
$P_1, P_2, P_5$	37	12.3	3.3
$P_1, P_3, P_4$	30	13.3	3.3
$P_1, P_3, P_5$	37	13.3	3.3
$P_1, P_4, P_5$	30	12	3
$P_2, P_3, P_4$	33	12.7	2.7
$P_2, P_3, P_5$	40	12.7	2.7
$P_2, P_4, P_5$	33	11.3	2.3
$P_3, P_4, P_5$	33	12.3	2.3

## Visualization

### Clustering

- Several similarity measures
- Multiple clustering algorithms

### Visualization

- Size based on contribution to skyline groups
- Force Layout

## Publications

1. On Skyline Groups. Li et al., ACM CIKM, November 2012.
2. On Skyline Groups. Zhang et al., IEEE TKDE, April 2014.
3. Anything You Can Do, I Can Do Better: Finding Expert Teams by CrewScout. Hassan et al., ACM CIKM, November 2014.

## CrewScout Interface

The screenshot shows the CrewScout interface. It includes a search bar for tasks, a task panel with details for task ID 177, a required skills panel with checkboxes for Design and Implementation, Database System, Query Optimization, Query Language, Query Evaluation, and Complex Data. A skill panel shows an aggregate function (AVG selected) and a skyline team size (3). A parameter panel shows a list of eligible experts with columns for Expert's Name, Complex Data, Database System, Query Evaluation, Query Language, Query Optimization, and Total Weights. The list includes experts like Raghu Ramakrishnan, Leonid Libkin, Dirk Gucht, Yehoshua Sagiv, Caetano, Junior, Agma Traina, Divesh Srivastava, Martin Grohe, Jan Busche, Kian-lee Tan, Diego Calvanese, Jeffrey Yu, Louija Raschid, Karl Aberer, Elisa Bertino, Tore Risch, Miron Livny, Yangjun Chen, Catriel Beer, and Maurizio Lenzerini.

This screenshot shows the Skyline Teams and Skyline Groups sections. The Skyline Teams section displays a table of team members' names and their scores across different metrics. The Skyline Groups section shows a visualization of skyline groups using a force layout. It includes a required skills panel, an aggregate function panel (AVG selected), a skyline team size panel (3), and a clustering parameters panel. The Skyline Groups section also includes a visualization of skyline groups using a force layout.

## Funding



Microsoft  
Research



[idir.uta.edu/crewsout](http://idir.uta.edu/crewsout)



This screenshot shows the Preferred Group Selection section. It includes a visualization of skyline groups using a force layout. It also includes a required skills panel, an aggregate function panel (AVG selected), a skyline team size panel (3), and a clustering parameters panel. The Preferred Group Selection section also includes a visualization of skyline groups using a force layout.