

A Machine Learning Approach to Model HRI Trends in 2010~2021

*Chan Hsu¹, Ching-Chih Tsao², Yu-Liang Weng²,
Cheng-Yi Tang², Yu-Wen Chang², Yihuang Kang¹, Shih-Yi Chien²*

¹ National Sun Yat-sen University, Taiwan, ² National Chengchi University, Taiwan

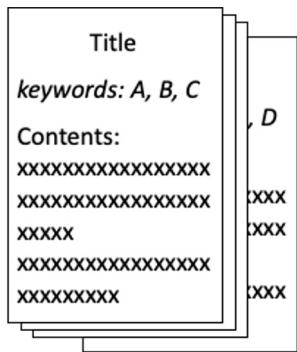


Motivation

- Human-robot interaction (HRI) has become an important field in recent decades.
- Contents of the various topics in HRI may change over time.
- By training topic models and updating their weights over time, we can understand the evolution and diffusion of the research topics in HRI.

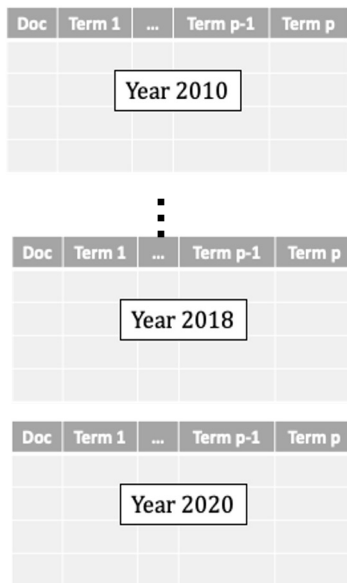
Methodology

1. Construct document-term matrices by year

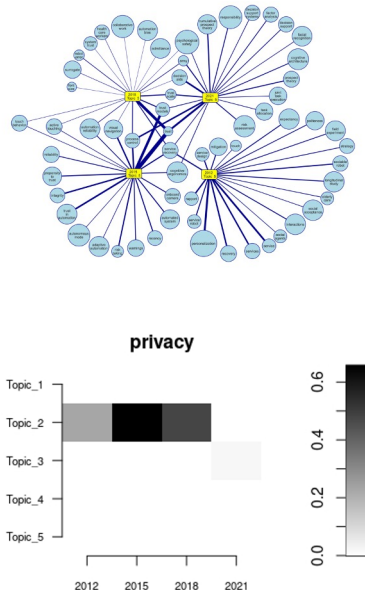


507 articles published
in International
Conference on
Human-Robot
Interaction
from 2010 to 2021

2. Initializ model weights with 2010, and update weights with following data

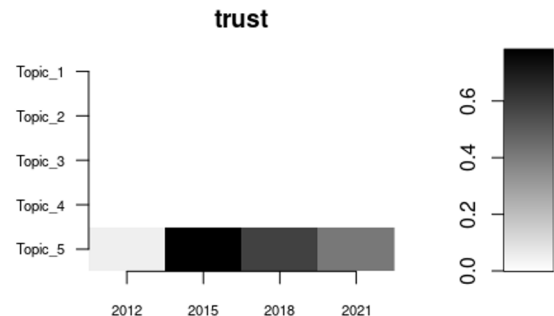
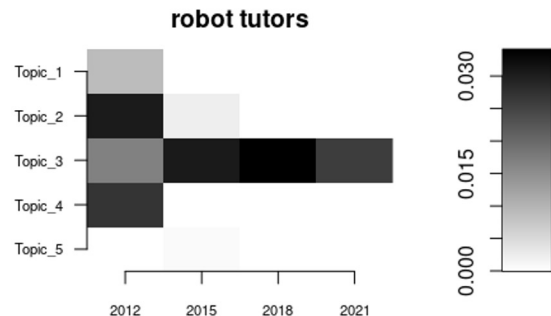
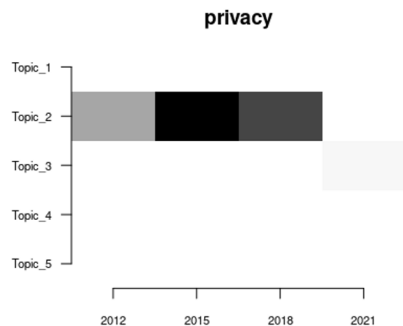


3. Discover topic evolution and topic diffusion with model weights



Main Findings

- Focus on “**privacy**” has suddenly cooled down during 2019~2021.
- Discussions on “**robot tutors**” converge to the topic about language learning.
- “**Trust**” and its derivatives continuously occupy important position in Topic 5.



Result and Discussion

Two general directions of researches are found in the International Conference on Human-Robot Interaction:

- **Technical and human aspects**
- **Robotic applications**

By using the Machine Learning approaches, our results can be strengthened rapidly as more studies collected in the future.