Course: Common Sense Reasoning

14. Understanding User Intentions

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There are applications that try to understand user intentions using common sense reasoning

- Inferring user intentions
  - BullySpace: Detecting cyber-bullying
  - Roadie: Helping use electronic devices
  - KitchenSense: Helping use kitcken appliances
- Inferring the implications of user intentions
  - Goose: Generating search-keywords from user intentions
  - What am I gonna wear?: Recommending clothes from user intentions

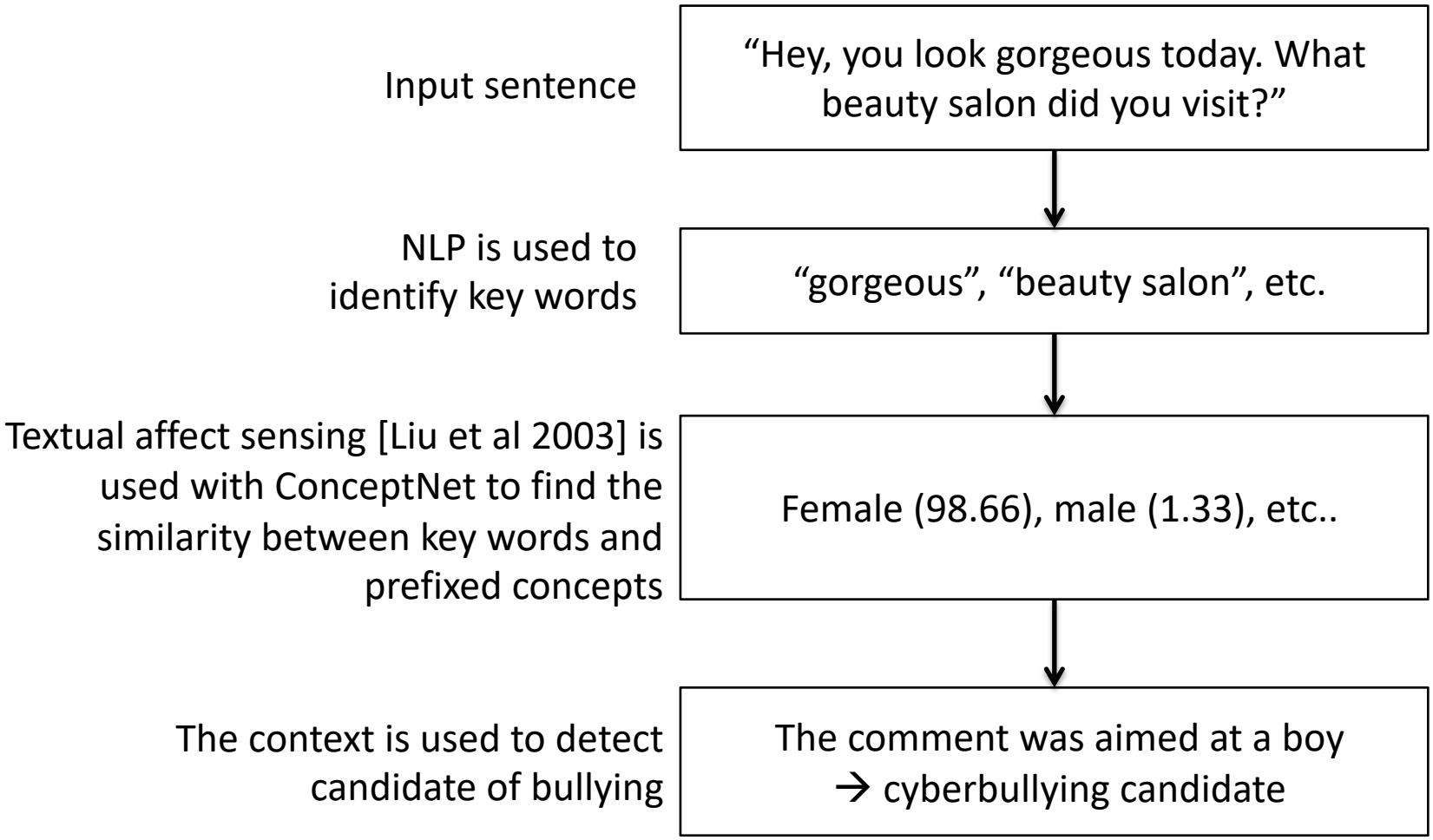
BullySpace is an application to detect cyberbulling

[Dinakar, et al 2012]

A sentence can be insulting depending on the recipient:

- Sentence ”put on a wig and lipstick and be who you really are"
- This sentence is more likely to be an insult if directed at a boy than a girl

BullySpace uses ConcepNet

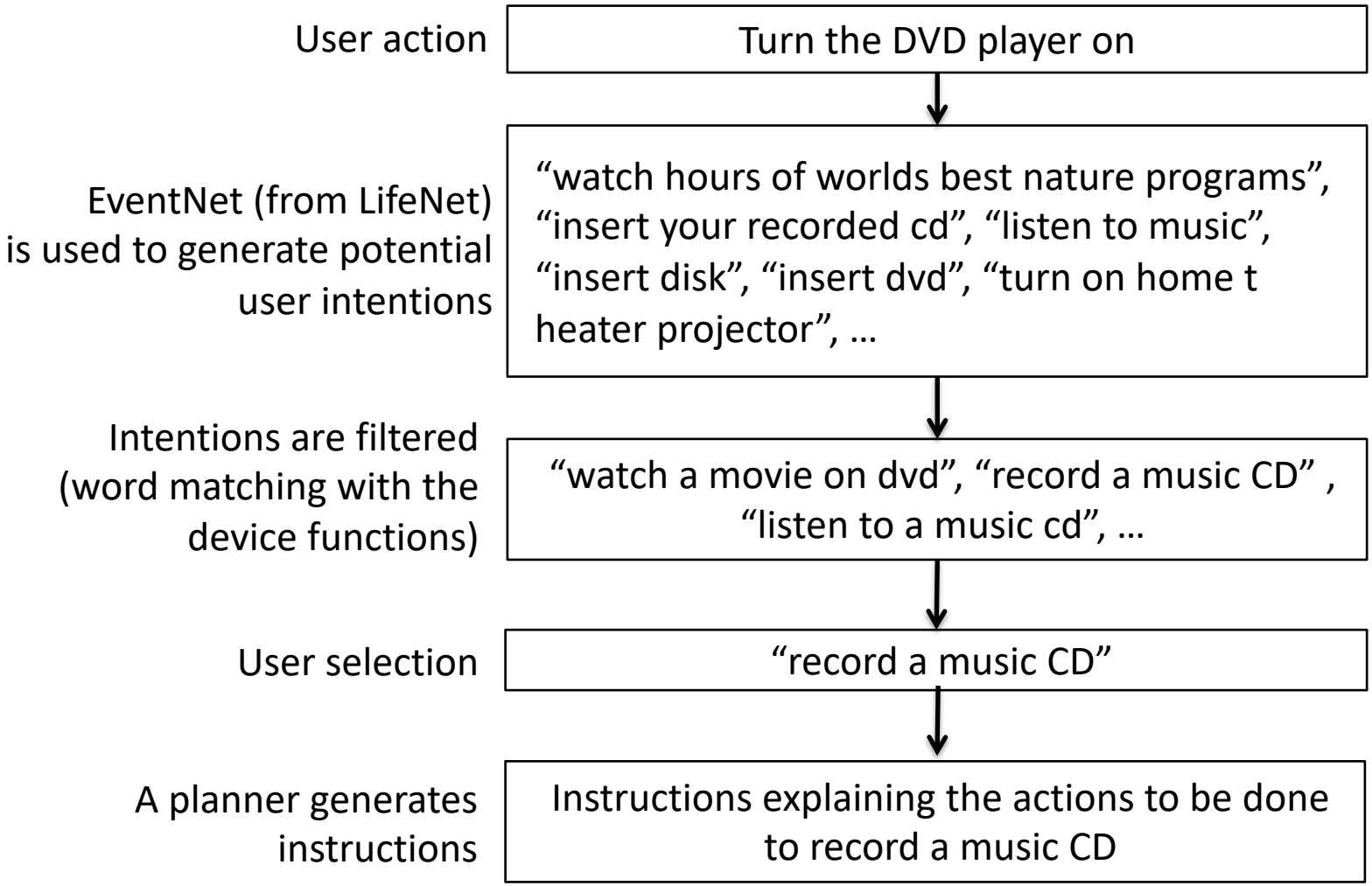


LifeNet is a knowledge base of ordinary human activity based on OpenMind

- Relates 80K propositions with 415K links
  - I-put-my-foot-on-the-brake-pedal → I-stop-a-car
  - I-pour-detergent-into-wash → I-clean-clothes
  - I-am-at-a-zoo → I-see-a-monkey
  - I-put-on-a-seat-belt → I-drive-a-car
- EventNet uses LifeNet to infer temporal relations between commonsense events

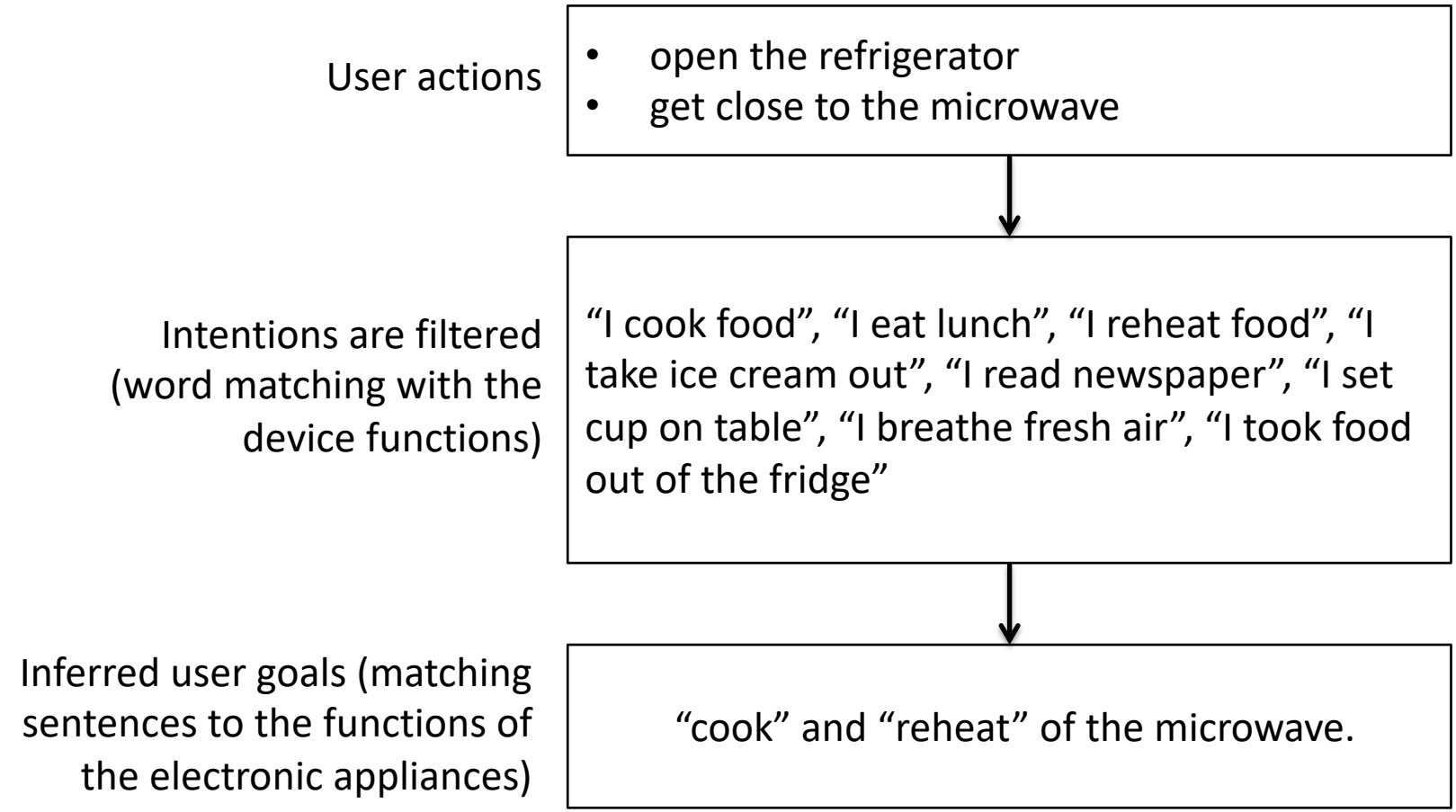
[Singh, Williams, 2003]
[Espinosa, Lieberman, 2005]

Roadie helps use electronic devices



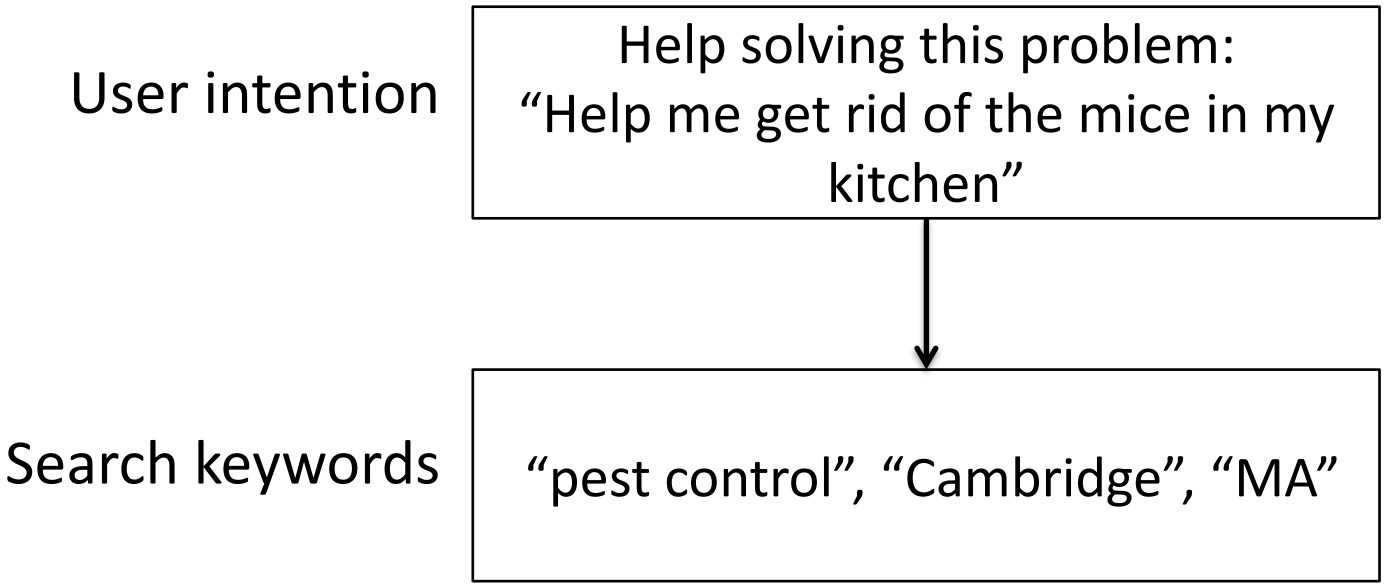
[Lieberman, Espinosa, 2007]

KitchenSense helps use kitchen appliances



[Lee, et al., 2006]

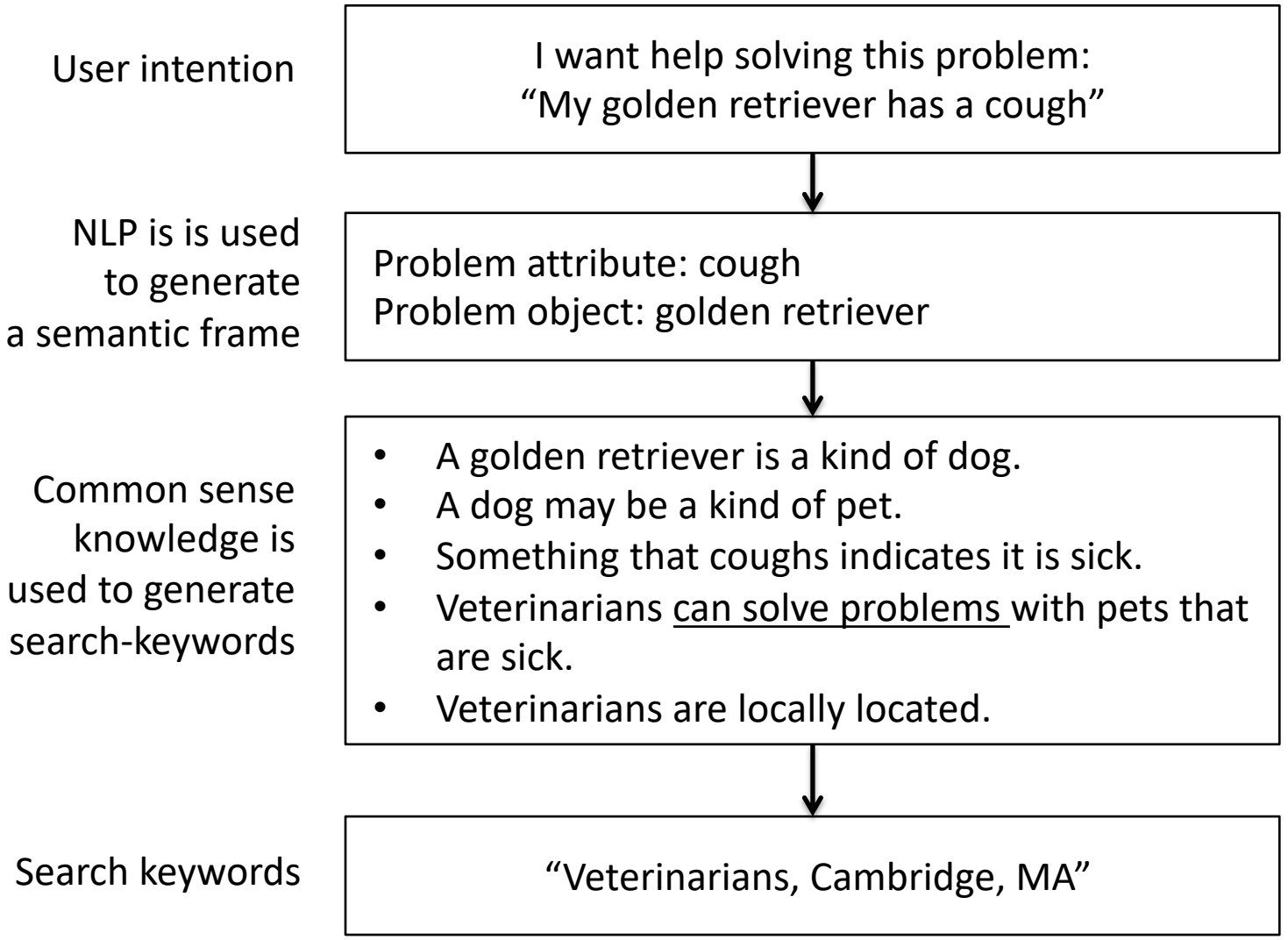
Common sense knowledge can be used to generate search-keywords from user intentions



GOOSE is a search engine based on user goals

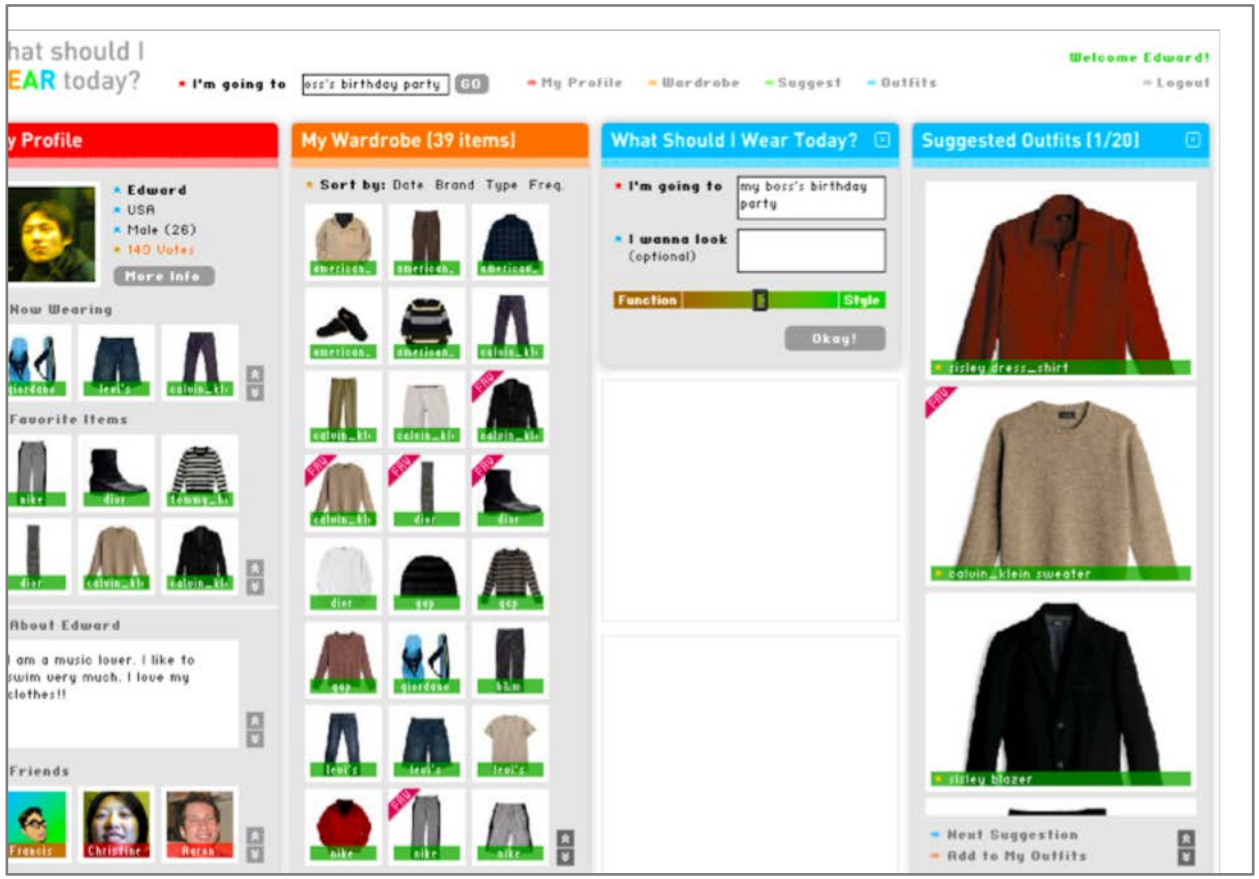
[Liu et al., 2006]

GOOSE uses common sense knowledge to generate search-keywords



”What am I gonna wear?” is a recommender system that uses common sense knowledge

The system recommends how to dress based on user intentions



[Shen, et al., 2007]

Example

User intention

I am going to have dinner with my boss

Recommended clothes

Common sense helps determine the similarity between input words and a tuple of words about the style of clothes

- Input words:
  - E.g., “I am going to have dinner with my boss”
- Tuple of words:
  - <“luxurious”, “formal”, “funky”, “elegant”, “trendy”, “sporty”>
- Method:
  - Textual affect sensing [Liu et al 2003] using ConcepNet

Recommender systems with common sense knowledge provide advantages

- User's intention as input:
  - "I am going to have dinner with my boss"
  - "I am going to the beach"
- Flexible input format
  - Open natural language communication as input

The described applications are experimental prototypes developed at the MIT

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Reviewed applications:

- BullySpace
- Roadie
- KitchenSense
- Goose
- What am I gonna wear?

Other applications:

- Linking between text and images
- Affective structure of texts
- Automatic word completion
- Mobile phone applications
- Etc.

[Lieberman, et al., 2004]

Course “Common sense reasoning”.

Work citation in APA style:

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