MARKET-BASED HIGHER EDUCATION COURSE RECOMMENDATION

Ana Isabel Sousa
Supervisor: Profª Ana Aguiar

11.02.2016

CHOICE OF A HIGHER EDUCATION PROGRAM

Decision determinant in the future career but:

- a huge variety of higher-education programmes is available
- different future employability
- program that leads to a certain career isn't always clear
- most of the programs web-pages don't state clearly the competences they provide

PROBLEM

How to use alumni and job posts information to recommend higher education programs appropriate to achieve a certain job?

GOAL

Higher-education program

recommendation system

LITERATURE REVIEW

RECOMMENDER SYSTEMS

Active user	⇒	**User**
Users	⇒	**Alumni**
Items	⇒	**Higher-education programs**
Item features	⇒	**Skills**
Preference/Like	⇒	**Having a certain skill**

TYPES OF RECOMMENDER SYSTEMS[1]

Content-based - recommendations based on items the user has liked in the past.

Collaborative - recommendations based on items liked by people with similar preferences

Hybrid - combination of the two above

COLLABORATIVE RECOMMENDERS [2]

Memory-based algorithms

Use the preferences to calculate the similarity between users and make predictions.

- **Top-N recommendations** [3]

Model-based algorithms

Learn a model from the ratings to make predictions.

DATA SET

DATA SOURCES EXPLORATION

DATA SOURCES

	Education and Skills	Jobs and Skills
landing.jobs		
LinkedIn		
StackOverflow Careers		
Upwork		
Xing		

- obtained from alumni information

- obtained from job offers information

DATA SOURCES

	Education and Skills	Jobs and Skills
landing.jobs		
LinkedIn		
StackOverflow Careers		
Upwork		
Xing		

- obtained from alumni information

- obtained from job offers information

DATA SOURCES

	Education and Skills	Jobs and Skills
landing.jobs		
StackOverflow Careers		
Upwork		
Xing		

- obtained from alumni information

- obtained from job offers information

DATA SET SO FAR

3017 jobs

1892 skills

13397 associations

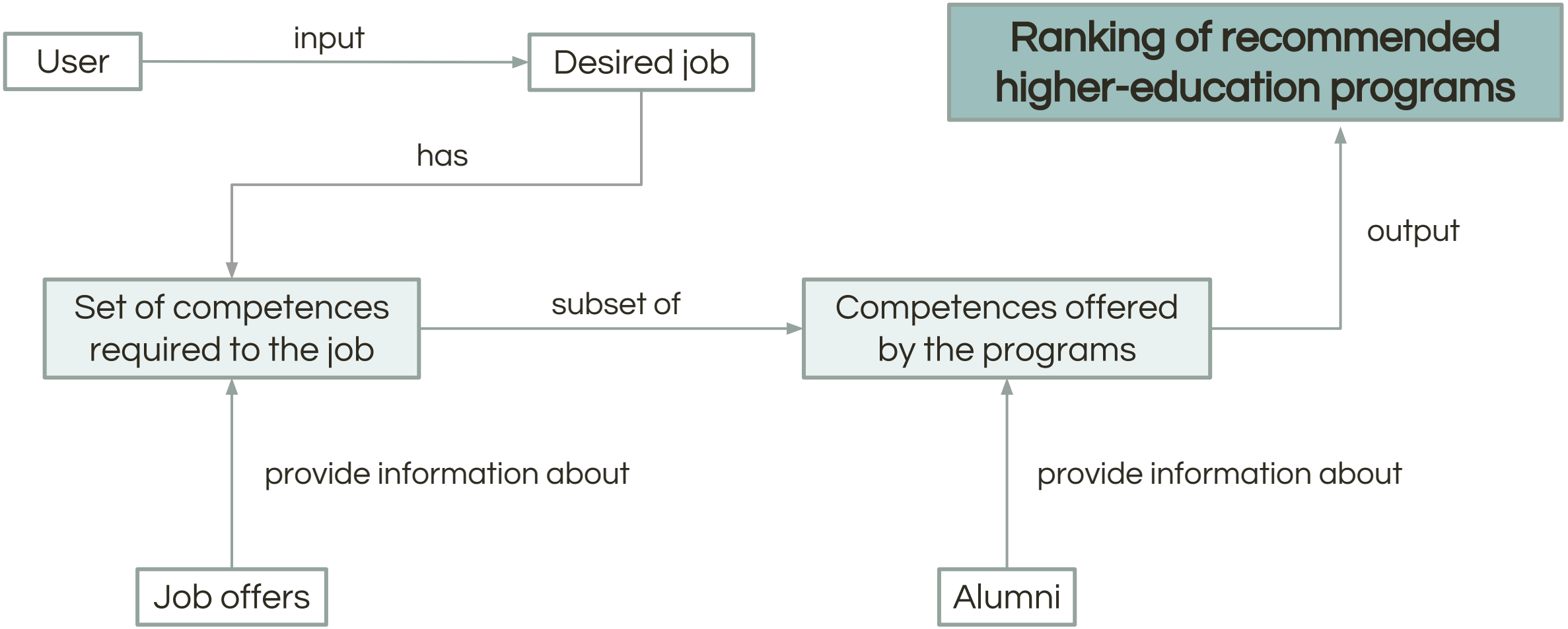
between jobs and skills

Full-stack developer

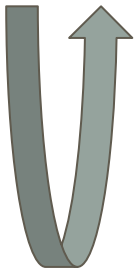
java	*.net*	*sql*
javascript	*html*	*jquery*
angular js	*php*	*python*
aws	*nosql*	*android*
cofeescript	*tdd*	*mvc*

CONCLUSIONS

THE SOLUTION



WORK PLAN

February - 15th March	16th March - 30th April	May	June
Collect and represent information	**Comparative evaluation of recommendation approaches**	**Prototype software module and validation**	**Thesis writing**
Collect data; Identify outliers; Group data.	 Recommender system implementation; Experimentation of different similarity measures; Evaluation.	GUI implementation; Validation.	

REFERENCES

[1] Adomavicius, G, and a Tuzhilin. 2005. “Toward the Next Generation of Recommender Systems: A Survey of the State of the Art and Possible Extensions.” IEEE Transactions on Knowledge and Data Engineering 17 (6): 734–49. doi:10.1109/TKDE.2005.99.

[2] Su, Xiaoyuan, and Taghi M. Khoshgoftaar. 2009. “A Survey of Collaborative Filtering Techniques.” Advances in Artificial Intelligence 2009 (Section 3): 1–19. doi:10.1155/2009/421425.

[3] Deshpande, Mukund, and George Karypis. 2004. “ Recommendation Algorithms.” ACM Transactions on Information Systems 22 (1): 143–77. doi:10.1145/963770.963776.

MARKET-BASED HIGHER EDUCATION COURSE RECOMMENDATION

Ana Isabel Sousa
Supervisor: Profª Ana Aguiar

11.02.2016