JOB RECOMMANDATION ON REAL-WORLD INTERACTION DATA WITH HETEROGENEOUS GRAPHS
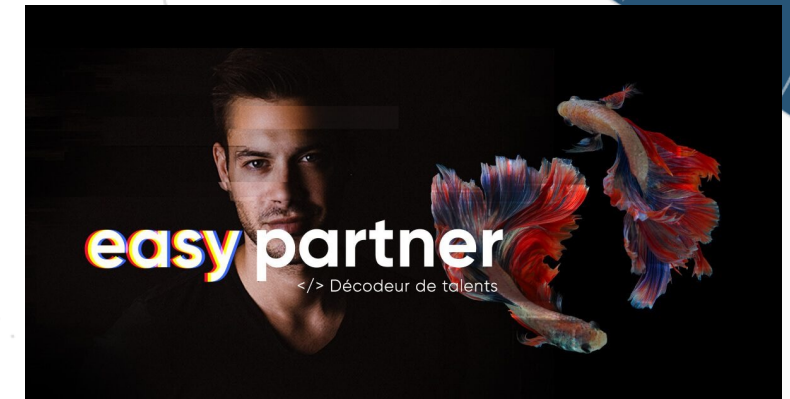
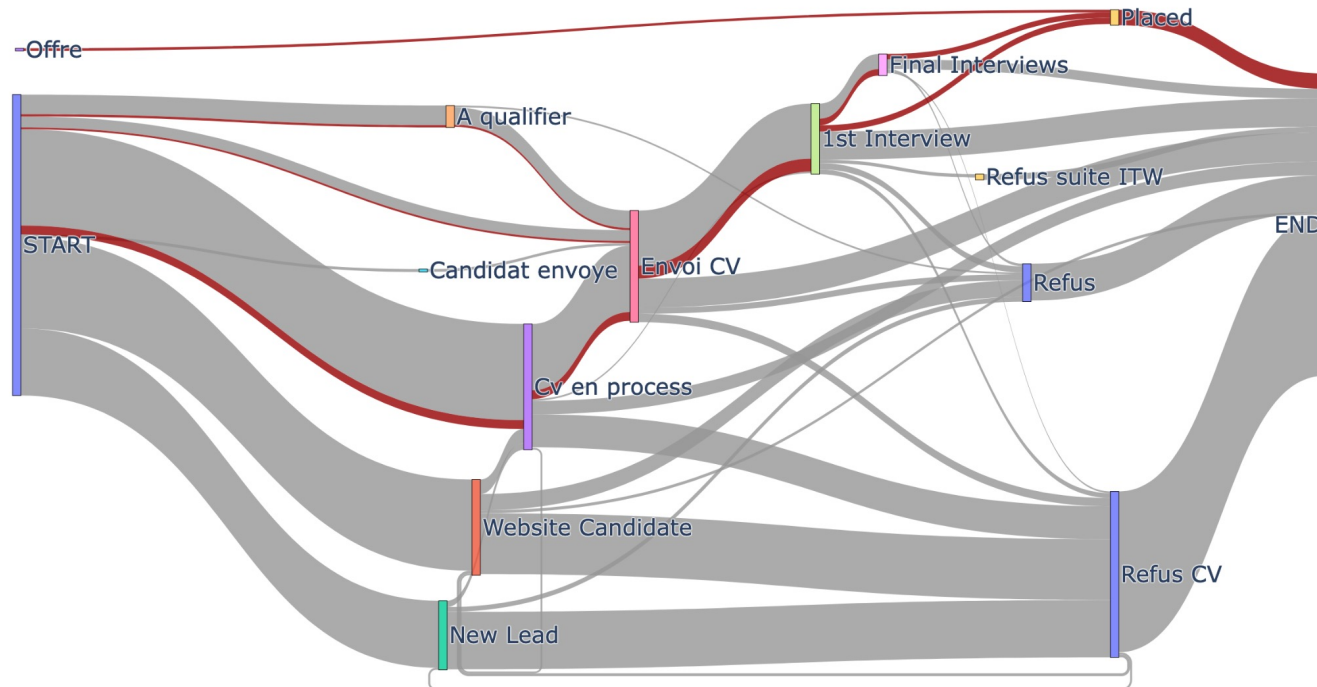# SOME ELEMENT OF CONTEXT
CIFRE THESIS AT EASY PARTNER

Easy Partner is a recruitment expert company based in Aix-en-provence

1. Most painful task for recuiter is matching profiles and job offers

2. There using an ATS (Applicant Tracking Software)

3. We get data about condidates, job postings, companies, company contacts …

4. .. but also job application history

MORE ABOUT OUR INFORMATION SYSTEM
WORKING WITH REAL-WORLD DATA

- 75 000 candidates profiles
  5 000 job postings
  1400 staffed jobs

- Qualitative structured and unstructured data filled by expert recruiters

- Rich historic of applications

- We choose to represent our problem as a **user-item (job-candidate) recommendation problem**

ABOUT RECOMMENDER SYSTEM

BENCHMARK OF THE MOST PREVALENT ALGORITHMS

3 types of algorithms:

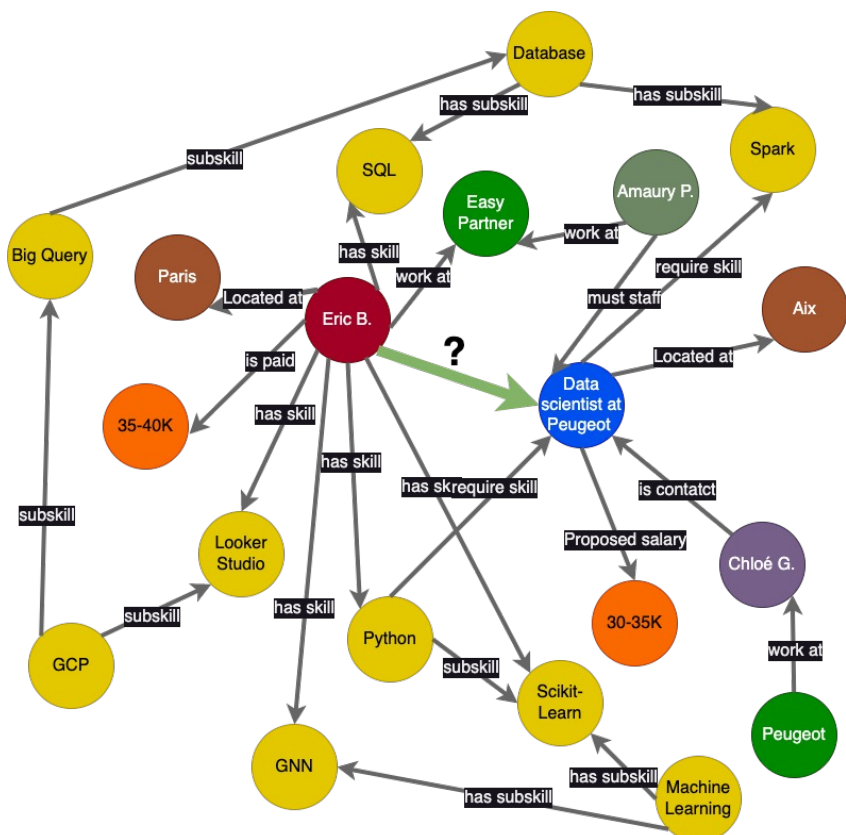Collaborative filtering

Content based

Graph based

Early result show **LightGCN** as most promising

Limit of these approach is **cold-start problem**

Algos	roc_auc	precision@10	recall@10	map@10	NDCG@10
UserCF	0,9067	0,0111	0,0917	0,0534	0,0826
Item2Vec	0,7451	0,0097	0,0801	0,0343	0,0471
GraphSage	0,8173	0,002	0,0157	0,0045	0,0079
LightGCN	0,9027	0,0108	0,0926	0,0463	0,0597
AutoInt	0,7773	0,001	0,0075	0,0032	0,0047
YouTubeRanking	0,5696	0,0005	0,0041	0,001	0,002
ALS	0,7944	0,0048	0,0401	0,0253	0,0303

CURRENT WORK
BUILDING AND TESTING HETEROGENEOUS GRAPH

- Exemple using fictive data for obvious reason

- Link predition

- This approach dodge cold start, early result:

AUC	Precision	Recall	F1
0.88	0.81	0.6	0.69

- We're implement it in our recommender system benchmark framework to get comparable metrics

Any questions ?

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