



# Warning It's a Scam!!

## Towards understanding Employment Scams using Knowledge Graphs

Nidhi Goyal<sup>#</sup>, Radhika Mamidi<sup>\*</sup>, Niharika Sachdeva<sup>+</sup>, Ponnurangam Kumaraguru<sup>\*</sup>  
{#IIT-Delhi, \*LTRC & PreCog Research Group, IIT-Hyderabad, + InfoEdge India Limited}

Contact: [nidhig@iiitd.ac.in](mailto:nidhig@iiitd.ac.in)



# Motivation

10-17-22

**'I didn't really get too suspicious until almost the end': Why employment scams are on the rise**

In the wake of the pandemic, victims are getting caught by scammers posting on job sites, or impersonating legit companies.

**Scam alert: BBB warns of new job interview scam involving messaging app, personal information**



**Women lost over 3 lakh in amazon job scam**



**Americans lost \$68 million to job scams this year—here's what to look out for**



**14 million people**



**\$2 billion money lost**



**Employment Scam among top five**



**Warning: It's a scam!! Towards understanding the Employment Scams using Knowledge Graphs**  
 Nidhi Goyal\*, Radhika Marmid\*, Niharika Sachdeva\*, Rajarajasekhar Kumaraguru\*  
 (\*IIT-Delhi, \*LICRC & **InfoEdge** Research Group, IIT-Hyderabad, \*InfoEdge India Limited)  
 Contact: [nidhi@iitd.ac.in](mailto:nidhi@iitd.ac.in)

**Motivation**

**Why study Employment Scams??**

14 billion people lost \$2 billion\*

9K+ Employment scams reported, third most prevalent scam type [2020-2022]\*

Information-rich unstructured scam complaints content just extracted and disconnected!!

Understanding complaints through Knowledge Graphs because world is a connected graph of entities by relations and not group of "things"

**Research Gap & Contributions**

Existing research

- Focus on qualitative studies which are survey-based and costly
- Ignore the heterogeneous information about money, location, employment type, organization, email, and phone number in the unstructured text that can help prevent consumers from losing money
- Missed understanding the victim's perspective (reported scams) and providing them objective information about scams

Contributions

- Dataset collection
- Entity detection
- Employment Scam Knowledge Graph construction

**Employment Scam Knowledge Graph**

Scammers impersonated well-known retailers like Amazon and Walmart to seem legitimate. Amazon mentioned in the complaint text was mostly 33%. 65% of the complaints mentioned email. 12% are engaged through online professional networks.

**Dataset and Analysis**

Dataset collection from August 2015 to April 2022. 27,656 Employment scam complaints.

Categories: Online Professional Networks, Online Social Networks, Email, call, Text message, Others.

**Proposed Approach**

Extracted the mode of approaching the victim from textual descriptions using a set of keywords

Extracted important entities using Spacy NER and heuristic-based approaches.

To integrate the knowledge, store these entities and relationships efficiently in graphical storage, i.e., Neo4j Cypher Query Framework.

**Findings and Applications**

Scammers impersonated well-known retailers like Amazon and Walmart to seem legitimate. Amazon mentioned in the complaint text was mostly 33%. 65% of the complaints mentioned email. 12% are engaged through online professional networks.

**InfoEdge**

# To know more about our research

→ Visit our poster!!!





# Acknowledgements

