IT Professionals in Germany. Labor Market Demands of Computer Science Education and their Perception on Social Media

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ABSTRACT

The skills and qualifications of IT professionals are constantly changing and under discussion. In particular, we see the impact of emerging technologies and tools, such as AI, on the labor market and their reflection in the broader scientific community, media and everyday life [2, 4]. Several approaches have discussed how to assess the impact of computer science education from the perspective of education and labor market research [5, 7]. However, in order to uncover the complex dynamics surrounding computer science education, we need to take a closer look at the labor demand as well as the public perception and valuation of IT professionals. Therefore, the poster presents a new method that combines the analysis of online job advertisements (OJA) for computer science occupations at different qualification levels with social media data (Twitter/X and YouTube). As OJA and social media are usually described in unstructured natural language, text mining methods are key to extract information about skills and competencies. We used the Computer Science Ontology (CSO) for annotation [1] and outline further research questions in the wider context of political economy.

1 CONTENT

The labor market for IT professionals in Germany depends on academic and vocational education, as well as training, retaining, and continuing education to meet future expectations. Going beyond a surface-level examination of academic and vocational education and schools, we compare labor market data from OJAs with social media data from Twitter/X and YouTube. Our poster describes the social media and OJA web mining, text mining and analysis pipeline and how we analyze concepts and extract further knowledge, eg.

skills and tools. We outline how the analysis of OJA can help identify and describe labor market needs, which can help identify skill and educational needs [3, 8]. Furthermore, the analysis of social media data can substantiate our knowledge about the broader perception and reception of labor market demands as well as changing skills and qualifications [6]. Social media platforms have become essential tools for understanding public opinions and sentiments and it is of further importance to study their social construction of work and occupations. Taking into account the German classification of occupations (KldB), we analyzed 273,029 tweets from Twitter/X, 337,927 metadata from unique YouTube videos, and 448,449 job postings of IT occupations. We compare the results of four distinct occupation groups according to the KldB by outlining positive, neutral and negative sentiments as well as thematic issues to uncover the complex narrative surrounding computer science education and the current shortage of skilled workers in IT professions on the German labor market. We find mostly neutral sentiments on Twitter/X and YouTube, but a rather positive bias within video commentaries. Negative sentiments adress, e.g., the theoretical focus of school and university education. Finally, we will critically reflect our data analysis and explore wider research questions.

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