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Seek and You Shall Find - Or Not! Why Can't We Find the Research Software We Really Need?

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Software discovery is a crucial aspect of research, yet it remains a challenging process due to various reasons: The lack of a centralized or domain-tailored search and publication infrastructure, insufficient software citations, the prevailing unavailability of software (versions) and many others. Researchers tend to utilize general search engines and their social network before considering code repositories, (text + data) repositories, and package management platforms, among other locations, to find the software they need. The resulting fragmented ecosystem is characterized by parallel developments from different, yet partially overlapping, redundant and non-interoperable infrastructure providers and research communities. Moreover, the discovery process is further complicated by missing or imperfect metadata, which can lead to limited search results. To address these challenges, it is essential to gain a deeper understanding of the different software publication and discovery systems.

In our talk, we will describe available discovery options, including code and publication repositories, domain, geographic, or institution-specific catalogs, classical search engines, curated lists, knowledge graphs, social networks, and all of these in various combinations, with and without the use of artificial intelligence. Besides characterizing each option, we will present examples, challenges and recommendations for an improved software discovery process. In addition, we will discuss the role of different stakeholders (e.g. developers, users, funders, publishers) and what they could do for better findability.

Our talk contributes to a systematic understanding of the software discovery landscape, technical shortcomings and their potential solutions. We envision valuable insights for researchers, infrastructure providers, and policymakers by identifying and comparing the different options for research software discovery.

I want to participate in the youngRSE prize

no

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