



# Second Workshop on Recommender Systems for Human Resources (RecSys in HR 2022)

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## KEYWORDS

Recommender systems, human resources, hiring, recruitment

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## 1 DESCRIPTION

### 1.1 Motivation

The field of Human Resources (HR) is at the forefront of adopting AI technologies. According to PWC over 40% of HR-functions of international companies use AI-applications [4]. This so-called HR Technology (HR Tech) aims to replace or support Human Resource functions such as talent acquisition and management, employee compensation, workforce analytics, and performance management.

Recommender Systems, broadly defined as systems that aim to support users in decision making by suggesting and offering relevant content, play an integral role in the rapid rise of HR Tech. Their applications range from assisting the talent acquisition process through matching [10], analyzing resumes or other user representations for candidate screening [22] and automated assessment [14, 16], to broader tasks such as recommendations for upskilling [21].

The use of AI applications in the recruitment process, such as recommender systems, is considered high-risk by the European Commission [23], as automation here can directly impact the (working) lives of people. In this light, the rise of AI-assisted hiring and screening is met with caution, and is a widely-used example application area in AI ethics and fairness literature [5, 12, 15, 18, 20]. At the same time, there is a rising commercial interest around these technologies from companies and startups alike [18]. We feel the prevalence and rise of recommender system technology in HR

calls for a central forum where researchers and practitioners alike can study and discuss the domain-specific aspects, challenges, and opportunities of RecSys and other HR Techs.

### 1.2 Relevance for RecSys

Past editions of the RecSys conference have seen a steady number of research contributions on automating and (more commonly) supporting job recommendation [3, 7, 9, 11, 13, 17, 19], all of which have focused on the core HR task of recruitment through the development of automatic job recommendation algorithms. In addition to this research, the RecSys Challenges of 2016 [1] and 2017 [2] both focused on the task of job recommendation, with Xing, a social network for businesses mainly operating in German-speaking countries, providing the training data. The task proved popular with 119 and 103 participating teams in 2016 and 2017, respectively, which shows a large potential audience at RecSys for research on recommender systems in an HR setting. HR tech has also attracted much attention recently in both industry-focused events<sup>1,2,3</sup> as well as academic workshops on job recommendation<sup>4,5</sup>. Despite the popularity of HR tech, most of its research areas such as explainability of recommender systems, retention, training and development, and performance and career management have not been addressed before at RecSys.

The goal of the **RecSys in HR** workshop series is to solicit and discuss relevant research initiatives on all areas of HR, not just on recruitment and job recommendation. Furthermore, in addition to soliciting research contributions from academia, we also aim to involve practitioners and representatives from industry and relevant government institutions through invited industry/government talks in addition to the standard invited academic talk.

The first edition of **RecSys in HR** was co-located with the 2021 hybrid edition of the RecSys conference in Amsterdam. **RecSys in HR 2021** was a very successful event, attracting around 15-20 physical attendees and 30-50 online attendees from different backgrounds [8]. It also featured eight high-quality presentations, two engaging keynotes by speakers from industry and government, and a panel on fairness in job recommendations. The interactive

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<sup>1</sup><https://events.cipd.co.uk/events/people-analytics/>

<sup>2</sup><https://hrfutureconference.com/programme>

<sup>3</sup><https://www.mihranalyticsconference.com/>

<sup>4</sup><https://compjobs.github.io/>

<sup>5</sup><https://feast-ecmlpkdd.github.io/>

format allowed for a stimulating discussion and intense networking activity and enabled this sub-community to focus on the critical issues specific to job recommendations.

However, the field of HR tech is rapidly developing and there are still many aspects and perspectives (e.g., legal, HR) on job recommendation that we were not able to highlight during a one-day workshop. While we did focus on fairness during the 2021 workshop, other aspects of responsible job recommendation, such as the explainability of job recommendations, the elicitation of user preferences, and the alignment with societal values remain untouched. With the upcoming EU regulatory framework proposal on AI, a focus on the legal challenges for job recommendation would also be a welcome theme for the workshop. Different research gaps around recommender systems and these regulations have been identified, amongst them the investigation of potential economic and social consequences of biases from recommender systems in recruitment [6]. We aim to invite both researchers and practitioners representing these different interests and perspectives to speak at the workshop or participate in a panel. Some of these invited speakers or panelists would be unlikely to normally attend RecSys, which would allow the workshop to provide a complementary experience to the main conference. Overall, we believe there are plenty of opportunities for organizing a stimulating second edition of **RecSys in HR** that would attract many interested attendees.

### 1.3 Contributions

The focus of the **RecSys in HR** workshop series is on all areas of HR: recruitment (or job recommendation), retention, training and development, performance and career management, talent pool management, and compensation and benefits. We invite submissions of original research on all aspects of recommender systems and other HR Tech – such as search, descriptive and predictive analytics, and interactive visualizations and dashboards – applied to any of these critical HR areas. In addition, we welcome position papers that discuss and present novel ideas or insights concerning approaches, critical challenges, or theoretical or methodological issues that have the potential to inspire substantive discussion and lead to significant advances in the field. We published a **Call for Papers** that listed the following example relevant topics:

- Theoretical and practical contributions on the application of recommender systems and HR Tech
- Interfaces for HR technology tools that employ recommender systems & HR tech and their role in decision making
- Bias, fairness, ethics of the use of recommender systems & HR Tech in HR
- Multi-stakeholder analyses of recommender systems in HR
- Explainability of recommender systems for HR tasks
- Other aspects of responsible job recommendation
- HR metrics and analytics relevant to the evaluation of recommender systems in HR processes
- Economic & societal consequences of recommender systems & HR Tech in HR
- Novel approaches to recommendation in HR
- User studies in recommender systems for HR and HR Tech
- Data sets for recommendation and HR Tech
- Cold-start scenarios in recommendation for HR

- Case studies of real-world implementations
- People analytics
- Expert recommendation & profiling
- User representation and modeling
- Human-augmented decision-making in HR
- Automatic extraction and classification of job functions and skills

## 2 WORKSHOP FORMAT & ACTIVITIES

We aim to make the **RecSys in HR 2022** workshop an inclusive, interactive, and inspiring event. Following the successful format of the first workshop on the topic (RecSys in HR 2021), again, we are making an effort to attract and invite participants from academia, industry and government with an interest in HR tasks and the technology to support them, hoping as such to gather a diverse range of perspectives at the workshop, which should make for more stimulating and engaged discussion. We hope to attract at least 30-50 participants to the workshop. Although this can be difficult to estimate given the hybrid format of the RecSys 2022 conference, we believe that this is manageable, given the fact that RecSys 2021 conference in Amsterdam was also in a hybrid format, and that the RecSys in HR 2021 attracted at least 30-50 participants. Most of the organizers aim to be physically present in Seattle, depending on the Covid-19 restrictions at the time.

In order to make the workshop as interactive as possible, we plan ample time for Q&A sessions after each presentation and after the panel to allow for more discussion. In addition, we hope to increase interactivity by closing the workshop with a break-out session where the attendees discuss some of the most relevant issues and challenges that have come up during the day. To help us organize and seed these break-out sessions, we plan on sending a short survey to confirmed workshop attendees in the weeks leading up to RecSys. We plan to use this survey to collect information not only about what the attendees see as the most pressing challenges and interesting topics in HR Tech, but also to help us profile our audience through questions about their affiliation (industry, academia, government), their specialization (HR, computer science).

Below are the different proposed workshop activities for the full-day workshop:

**Introduction.** This includes both an introduction to the purpose and schedule of the workshop as well as a round of introductions of all participants in order to make everyone feel welcome and part of the workshop.

**Invited keynote #1** Liangjie Hong (Director of Engineering, AI at LinkedIn) will be giving our workshop's first keynote. The invited keynote will be 30 minutes in duration followed by 20 minutes for discussion and Q&A.

**Paper presentation sessions.** We will solicit research papers and position papers, for these paper sessions. All accepted contributions will have short 10-minute presentations with 10 minutes for discussion and Q&A. In addition to the perceived fit with the workshop themes listed above, evaluation criteria for acceptance include novelty, diversity, significance for theory/practice, quality of presentation, the perspective of the authors (academia, industry, government) and the potential for sparking interesting discussion at the workshop.

All submitted papers are reviewed by the Program Committee (shown further below). We will have at most three paper sessions, but the actual number is dependent on the number and quality of submissions.

**Invited keynote #2** Robyn Rap (Senior Data Science Manager at Indeed) will be giving our workshop's second keynote. The invited keynote will be 30 minutes in duration followed by 20 minutes for discussion and Q&A.

**Panel on the benefits and challenges of automatic job recommendation.** Like last year's edition, this year too we will host a panel discussion to bring together practitioners and researchers from different backgrounds to discuss the benefits and the challenges of automatic job recommendation and related tasks. Such challenges include how to deal with biases and fairness, transparency, ethics and societal impact of such (semi-)automated systems. The tentative panel members backgrounds include academic HR, industry HR background, academic technological, and with general expertise on fairness, bias and transparency of recommender systems, to bring in a variety of perspectives. Our first confirmed panelist is Trey Causey (Head of AI Ethics & Director of Data Science at Indeed), in addition we have invited Helen Hulsker (Sr. Legal Counsel at Randstad) to bring a legal perspective, and Carlos Castillo (professor at UPF) to bring an academic perspective on AI fairness. We also plan to invite our invited speakers to take place on the panel. The planned duration for the panel is 45 minutes.

**Break-out session.** After a brief introduction to the different available discussion topics for the break-out session and its format, we will divide the workshop attendees over the different break-out groups by their self-selected interest. To seed these workshops, we will use the results of the short survey sent out before the workshop. The planned duration for the break-out sessions, including introduction and reporting back at the end is 45 minutes.

### 3 WORKSHOP ORGANIZERS

- Toine Bogers (Aalborg University Copenhagen, Denmark)
- David Graus (Randstad Groep Nederland, the Netherlands)
- Mesut Kaya (Aalborg University Copenhagen, Denmark)
- Francisco Gutiérrez (KU Leuven, Belgium)
- Sepideh Mesbah (Randstad Groep Nederland, the Netherlands)
- Chris Johnson (Indeed, USA)

### 4 PROGRAM COMMITTEE

This year's workshop has the following program committee:

- Anne Kroon (University of Amsterdam)
- Emma Beauxis-Aussalet (Vrije Universiteit Amsterdam)
- Mike Zhang (IT University of Copenhagen)
- Robin Burke (University of Colorado, Boulder)
- David Brazier (Edinburgh Napier University)
- Carlos Castillo (ICREA and Universitat Pompeu Fabra)
- Hui Xiong (Rutgers University)
- Judith Masthoff (Utrecht University and University of Aberdeen)

- Bo Kang (Ghent University)
- Jens-Joris Decorte (TechWolf)
- Ludovico Boratto (University of Cagliari)
- Volodymyr Medentsiy (Randstad)
- Manish Raghavan (Harvard University)
- Mihai Rotaru (Textkernel)

### 5 TIMELINE

Our workshop followed the deadlines as proposed by the RecSys 2022 workshop chairs:

- First call for participation: April 15, 2022
- Paper submission deadline: August 5, 2022
- Reviewer deadline: August 21, 2022
- Notification of paper acceptance: August 27, 2022
- Camera-ready version deadline: September 10, 2022
- Workshop (at RecSys 2022): September 22, 2022

### 6 PROMOTION & DISSEMINATION

In addition to our dedicated workshop website: <https://recsysshr.aau.dk>, we have announced the workshop on the appropriate mailing lists, e.g., SIGIR, AH&H, JISC, User Modeling, KDNuggets, IUI, CHI-Announcement, etc. We have also established a social media presence for the **RecSys in HR** workshop series using Twitter at <https://twitter.com/RecSysHR>.

We plan on publishing the proceedings in the CEUR workshop proceedings. We also aim to publish a summary of the workshop in venues such as the SIGIR Forum to increase cross-disciplinary awareness of recommender systems research and events—like we did for the 2021 edition. In addition, we aim to explore the possibility of publishing a special journal issue on HR Tech.

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