Perspectives from Practice
Algorithmic Decision-Making in Public Employment Services
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ABSTRACT

Algorithms are increasingly being implemented into core welfare areas as Public Employment Services. These data-driven technologies are implemented with the ambition to support caseworkers' decision-making capabilities, by profiling unemployed individual’s risk of long-term unemployment. The research outlined in this paper investigates how we can study opaque technologies as algorithms from the perspective of the users (caseworkers) and those categorized (unemployed individuals) by these systems. This is done by combining established methods within Computer-Supported Cooperative Work, including ethnographic fieldwork and Participatory Design methods. I present preliminary results focused on caseworker’s perception of the value of AI in job placement, and find documentation plays a central role in collaboration in casework.

With this research, I am to contribute to a deeper understanding of how the organization of work is impacted by data-driven technologies like AI and explore ways to include the voice of unemployed individuals in the development of digital public services.

KEYWORDS

• Algorithmic decision-making, Casework, Participatory Design, Transparency, Public Services

CSCW CONCEPTS

→ Collaborative and social computing: Empirical studies in collaborative and social computing.

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INTRODUCTION

Data-driven technologies as algorithms for decision-support or Artificial Intelligence (AI) are increasingly being implemented into public services. Often with the “old” ambition of computerization [13]: increased efficiency, reduction of costs, or better service. Several OECD countries as Austria [1], Portugal [26], and Denmark [18] are implementing these technologies into Public Employment Services or job placement for profiling and categorizing unemployed individuals. Concretely, diagnosing the risk of long-term unemployment for newly unemployed jobseekers is a common goal for algorithmic systems across these countries. Casework is a well-established focus area for CSCW [18], and implementation of AI into similar welfare areas as health [2] and job placement [19] is a growing focal point for the broader area of Human-Computer Interaction (HCI) including Computer-Supported Cooperative Work (CSCW). Scholars are increasingly trying to understand the organization of work in job placement casework and its complexities for the implementation of AI into this context [10, 21]. Traditionally, the scope of CSCW has had a focus on work [25], understood as paid labor. This is also reflected in the preliminary focus of the implementation of AI into job placement, which is currently taking the perspective of the users of these AI systems: caseworkers, so far leaving out those profiled or categorized by the same systems: the unemployed individuals. A concern regarding AI systems for decision-support within legal decision-making is biased and opaque decisions potentially harming public trust in public administration [20, 25]. From a governmental standpoint, there is a political agreement that Denmark should be a forerunner within the area of AI [17], and currently, several AI pilot projects are being tested into different areas of public services as job placement, health, and child welfare [15].

The latest annual economic agreement between the municipalities and the government in Denmark continues a strong focus on increased digitalization with “the citizen as the center of attention and taking citizens trust, safety and security into consideration” [16]. Despite this public ambition of developing AI, and including the citizens, there is a knowledge gap of how citizens in general, and unemployed individuals in particular, experience being categorized by AI systems in public services, or where the citizens would deem these technologies valuable.

This Ph.D. research is a part of the interdisciplinary research project PACTA (Public Administration and Computational Transparency in Algorithms), bridging areas of expertise from computer science and law. The overall research aim of PACTA is to “contribute new, research-based knowledge about how algorithmic decision making can be implemented in public administration without undermining the legality of administrative decision-making processes or losing public trust in the authorities that use this technology”.

RESEARCH QUESTIONS

This research aims to bring insights from the implementation of algorithms for decision-support into the area of Public Employment Services, seeking to include both a caseworker and a citizen perspective into the research, thus the two guiding research questions are:

1 Webpage of PACTA: https://jura.ku.dk/icourts/research/pacta/
**Research question 1**: How does the implementation of algorithmic decision-support systems shape and impact the organization of work in jobcentres?

**Research question 2**: How can the perspective of those profiled and categorized by algorithmic decision-support systems, being unemployed individuals, be taken into consideration in the development and implementation of algorithmic decision-support systems in Public Employment Services?

## 3 METHODOLOGICAL APPROACH

### 3.1 Enrolling algorithms into ethnography

This thesis primarily uses qualitative methods for several empirical inquiries, combining different ethnographic tools, as fieldwork [22] to unpack the implementation of algorithms for decision-support in job placement, following scholars as Christiné, who suggests enrolling algorithms in ethnographic research, for example comparing algorithms across sectors or triangulating them through rich qualitative data [6]. A part of studying algorithms with an ethnographic approach is also suggested by anthropologist Nick Seaver, who proposes scavenging as a method: using everything from interviews, observations, conversations at dinner parties, news articles, etc., practical everything available to get to know these objects of secrecy [24]. Another approach that has recently gained attention within the HCI community, is suggested by scholars as DeVito et al. to use folklore or “folk theory” as a lens to examine the relationship between the algorithmic systems and its user [7]. According to them, this paves the way for bringing in the “lay” expertise and understanding of users’ interactions with these systems. This is often described in the context of users’ interactions with online platforms or “gig workers”, and many of these users find these algorithms “profoundly opaque” [6].

**Research question 1** is targeted at two cases of algorithmic decision-support systems profiling newly unemployed citizens at risk of long-term unemployment. Case one is focused on an algorithmic profiling tool, profiling unemployed individuals at risk of long-term unemployment based on 10 variables, including a self-service questionnaire which the unemployed persons fill out online when they become unemployed. The algorithm is developed by a governmental agency and is available in all Danish job centers. This study consists of both a document analysis (in broad terms) of how the algorithm came into being: from the political reform in 2013, guides for caseworkers or reports on the project, combined with an empirical inquiry (2020-2021) of both interviews with municipal caseworkers from different municipalities and ethnographic field-study(20h) in one municipality about their use or non-use of this algorithm. The data collection for this work is ended. This study is expected to contribute insights from the development and implementation of an algorithmic decision-support system, for example, identifying reasons for non-use with potential implications for the design of similar systems in public services.

Case two is concerned with caseworkers in one job center, and their experience of working with a newly implemented AI system developed by a private company applying 50 variables in its categorization of newly unemployed individuals into three categories: high/average/low risk of long-term unemployment. The AI system calculates jobseekers risk score based on 50 variables as education, age, gender, type of housing, etc. To understand how the advent of this AI system impacts and shapes the organization of work, I am currently interviewing four caseworkers every month, from the job center implementing the AI system. This study is currently being conducted and is planned to run from May-September 2021, possibly longer. This study is expected to contribute a practice perspective on the use of AI in job placement, and how it shapes the organization of work within this context.

Researching both cases is inspired by traditional workplace studies [e.g. 12 and 23] and ethnographic fieldwork [22], including physical visits to the job center, shadowing caseworkers, and observing consultations between caseworkers and jobseekers, when possible due to COVID-19 restrictions. This also includes bringing in their lay understanding of the algorithms, or artefacts as work processes and diagrams from their daily work.

**Research question 2** focuses on exploring how we can involve the citizen in the development of algorithmic decision-support in public services. Within the broader area of HCI, Participatory Design methods are well established for bringing in a user or citizen perspective. For example to enhance democratic engagement [5], strengthen collaboration between citizens and municipal caseworkers through prototypes as timelines [3], or increasing citizen’s ability to understand, plan and apply for social benefits [4]. Inspired by Participatory Design, I plan to make workshops, as well as interviews and observations with unemployed individuals. This ambition is double-sided. First, to explore how Participatory Design methods work with a potentially vulnerable group. Second, to understand how unemployed individuals perceive the use of algorithmic decision-support in the job center, or how they can be involved in the development of these systems which they would see as valuable for their situation. This study can contribute both a methodological understanding of how to involve those impacted by AI systems, in this case, unemployed individuals where some might be considered vulnerable, in the development of AI systems, and to gain their perspective on the role and use of this technology in job placement.

## 4 FINDINGS TO DATE

Combining a Participatory Design workshop with municipal caseworkers with qualitative interviews with caseworkers in job placement, we contribute an understanding of how documentation is often at the center of collaboration in job placement casework [10]. We also find how caseworkers perceive algorithmic decision-support as valuable when it can support their decision autonomy or discretion in consultation with unemployed individuals, for example when arguing for a specific welfare program. What also became evident was how contextual issues such as the timing of a decision influence how well algorithmic decision-support could aid this decision. For example, the caseworkers perceived AI support or automation for retrieving documentation from external collaborators, e.g., medical practitioners, to be straightforward with some medical conditions as arthritis, but more difficult if a mental illness was suspected by the caseworker. Furthermore, collecting documentation could also be seen as an act of distrust, the caseworkers told us, thereby making them postpone the decision. This work will...
be presented at the CSCW’21 conference. Apart from these published findings, a study of caseworker’s transition from collocated to remote work during COVID-19 is currently under review.

5 EXPECTED CONTRIBUTION

This Ph.D. research aims to contribute an empirical investigation of data-driven technology into a core area of public welfare with potential implications for design. For example, how these technologies shall be designed to support the organization of work, or how those impacted by the systems can be involved in the development of these systems. Scholars as Dombrowski and others [8] are questioning the relationship between technology and larger political issues, such as unemployment, and determining eligibility or identifying the deserving poor [9]. The research outlined here can hopefully contribute to the area of CSCW dealing with political issues and larger-scale projects, as highlighted as an important area for CSCW research [11], and bringing a practice perspective [14] of those working with, and profiled by these AI systems. As AI projects are currently being tested and implemented into public services in Denmark, apart from contributing to the ongoing knowledge-creating around the agenda of AI within CSCW, this research can hopefully inform policymakers, as well as practitioners, designers, and developers.

From the doctoral consortium, I hope to gain valuable feedback on the two research questions, the methods presented, and their expected contribution. Especially in the light of COVID-19, which has impacted not only my research but also restrained my opportunities to participate in conferences and getting to know other senior researchers and Ph.D.-students, participating in a DC is becoming even more valuable for us Ph.D. students for discussing our research and becoming a part of the scientific community.

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