Disability-Centred AI & Algorithms. Memo

How can we stop perpetuating social exclusion?
Algorithms may discriminate against individuals with facial asymmetry, different gestures, gesticulation, communication patterns or used assistive devices.
The most affected group – people with disabilities, cognitive and sensory impairments, autism spectrum disorders
Algorithms do not create biases themselves but **may perpetuate** societal inequities and cultural prejudices.
E.g. Unemployment among individuals with disabilities - 50-80%, for cognitive disabilities or severe mental health disorders - up to 85%
E.g. Such individuals are often falsely stopped by the police, discriminated against during the job interviews, excluded by educational system
E.g. They are also a few times more frequently victims of violence, abuse, manipulations, unjust law-enforcement
There are high and acceptable-risk scenarios when autonomous systems may perpetuate this discrimination.
E.g. Workday’s AI system was alleged by an older black man with a disability who mentioned that the algorithm potentially hinders his job search.
E.g. iTutorGroup was alleged in an age discrimination by Equal Employment Opportunity Commission
E.g. Social networks may recognize you as “not alive”, “non-human” or “emotionally flat” due to different behavior or action pattern
E.g. Generative AI or content-based systems may add negative connotations or sentiment to “disability” associated keywords or phrases in your CV.
E.g. Bank systems may not properly recognize your uploaded documents or automated video interview
E.g. Police and autonomous security systems may falsely recognize your assistive device as a weapon or dangerous object.
There are other scenarios including biometrics, voice, facial and tactile recognition which can't properly identify individuals with disabilities.
Or emotion recognition systems which are known to be prone to bias and inability to identify particular facial expressions
How can we address these challenges?
1. Understanding that disability is not the monolith, but the spectrum, including the unique cognitive, communication and physical patterns
E.g. Disability can be **visible or non-visible**, include physical, visual, hearing or cognitive impairments, facial, speech or tactile differences
2. Understanding that disability is intersectional, specifying research and development, depending on age, gender, social and historical criteria.
E.g. Girls are often misdiagnosed due to different diagnostic criteria, certain ethnic groups are historically excluded from research data.
3. Understanding that individuals with disabilities may use **assistive technologies** - devices, tools, apps
E.g. Wheelchairs, smart sticks, bionic limbs, visual, hearing and sensory enhancement devices, assistive robotics and learning solutions, etc.
4. Understanding that individuals with disabilities are also presented by their families, caregivers and diverse stakeholders
E.g. Solutions that support individuals with autism may have 2 interfaces, one - for the parent, another one - for the child
5. Understanding the necessity to build the **representation**, an accessible **vocabulary**
E.g. Less than a quarter of individuals with disabilities are fully presented in the workplace, much less are involved in AI-systems research, development,
6. Understanding the sensory and cognitive spectrum, **co-occurring conditions** and other parameters
E.g. 25-40% of individuals with cognitive disabilities may experience mental health disorders, allergies and other co-occurring conditions.
7. Building **accessible curriculums** and recommendations for required skills and the system adoption
E.g. Some social AI companies focused on cognitive impairments, position themselves as "learning companies" due to the necessity to build adoption skills and curriculums.
8. Evolving **knowledge frameworks**, incorporating bioethics, social studies, technology justice
E.g. WHO and similar agencies constantly evolve approaches to "digital health competence frameworks" frameworks. There is a need in accessibility ones as well.
9. Ensuring a constant feedback loop between user and the platform's developers
E.g. Sensory and cognitive differences require notification and feedback systems that are easily reached and aligned with individual ability.
10. Ensuring a human involvement and decision-making, establishing limitations of the system's autonomy
E.g. "Social companions" and assistants are frequently used in learning process. However, it doesn't exclude a teacher's involvement.
11. Avoiding "technical fixes" - automation of the error and issues fixing, perpetuating existing problems
E.g. Such companies as Meta frequently use AI to automate bug finding and fixing, creating a vicious cycle of repeating errors and bias.
12. Defining "disability"-specific risk and impact assessment such as law enforcement, biometrics, screening systems prone to discrimination
E.g. Existing AI Acts and "impact assessment" methodologies often do not specify disability-specific scenarios, risks and evaluation criteria
13. Reassessing so-called "low-risk" systems which may pose greater risks for individuals with disabilities such as emotion recognition.
E.g. Emotion recognition systems are specifically prone to bias, often not able to identify particular facial expressions, emotions, gestures.
14. **Avoiding silos**, providing guidance on how technology may serve as a tool, but not a replacement for social practises
E.g. 40% of individuals with disabilities feel socially isolated. Attempt to replace social communication with algorithms may perpetuate it.
15. Assessing **scenarios of misuse**, including abusive actions and manipulations
E.g. Individuals with disabilities often become victims of social media abuse or manipulation. They are also frequently "misidentified" by social algorithms.
16. Assessing "omissions" - no-actions that may present harm and should be evaluated in the same way as "actions"
E.g. It includes cases when the system may create silos, errors, excludes particular groups, or being based on not genuine data.
17. Protecting cognitive, patient and disability data privacy
E.g. Patient data is frequently used in areas of mental health and neuroscience. However this process may violate the privacy of people with disabilities.
18. Protecting individuals data creation and **ownership** rights
E.g. Individuals using assistive technologies are not only users but creators. For instance, individuals may create works using Generative AI or smart assistant.
19. Establishing disability-centered approaches to the audit, eliminating discriminatory influences
E.g. Individuals with disabilities were historically excluded from data-sets which are predominantly based on generalizations and "proxies"
20. Ensuring **transparency and explainability** (ability to explain the system's decisions, outcomes, semantics)
E.g. It was reported, that some hiring and screening platforms automatically fired some employees and were not able to provide the "justification"
21. Ensuring **accountability**, including end-to-end answerability (who is accountable) and auditability (how they are accountable).
22. Ensuring that AI systems and assistive technologies are actually accessible, can be purchased and used by individuals with disabilities.
23. Ensuring that AI systems truly benefits everyone
E.g. AI algorithms are known to be biased against particular age-groups, elders, individuals on the spectrum - ADHD, Dyslexia, cognitive diversity
24. Prohibiting *unacceptable risk systems* that threaten human's life and safety such as autonomous weapons, warfare and policing systems.
E.g. UN Special Rapporteur raised concerns and emergent call-to-action addressing disability and rapidly evolving autonomous systems
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