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Adecco - Al nel mondo HR Il progetto AEQUITAS Pisa, 13 Maggio 2025



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## Adecco - Al nel mondo HR Il progetto AEQUITAS

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FUNDED INNOVATION SOLUTION MANAGER





### https://www.aequitas-project.eu/



















#### **Use Cases HR1 and HR2**

### The Adecco Group (Mylia, Badgebox)

08/05/2025



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### **AEQUITAS – Vision & Goals**

AEQUITAS is a three-year project that is developing a framework to address and tackle the multiple developers.

Part of the Fairness Cluster Human 01 24 (composed of the European projects AEQUITAS, BIAS, FINDHR and **MAMMOTH**, funded through the **Horizon Europe** program), which is associated with the AloD Platform, managed and developed by AI4Europe.

## manifestations of bias and unfairness of AI by proposing a controlled experimentation environment for AI



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## **AEQUITAS – Objectives**

#### **Technological**

- Ease the assessment, design, and development of fair AI systems
- Support the AI producers and AI consumers prosumers on the development/use of fair AI Assets on the AI-on-Demand platform that becomes a one stop shop for fair-by-design AI systems
- Enrich the state of the art with novel algorithms and techniques for bias detection and mitigation
  - Generate synthetically biased datasets
  - Effectiveness and usability assessment of real-world use cases

#### **Public and private sector**

- **Boost ethical compliant innovation**
- Promote trustworthy AI for the public sector and services

#### Societal and legal

Involve society in the development of ethical, equitable, and fair AI systems relevant to different groups of stakeholders

Raise awareness of AI bias on companies, public bodies, scientific communities, local associations, and the public in general, and provide a knowledge-toolkit toward the development of socially equitable and responsible AI

Involve underrepresented groups' perspectives and non-expert points of view in the design, development, and training of AI systems





















### Why AEQUITAS

engine as well as a synthetic dataset generator.

The project involves under-represented groups and individuals' perspectives in the design, development and training of AI systems. he selected uses cases.









#### AEQUITAS goes beyond the AI state-of-the-art by anticipating biases and harm at the design stage of AI services e.g the awareness and diagnosis

Gender dimension is well addressed, taking it into account throughout all activities within the project. Plans to engage and co-create with citizens and end users.



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### **AEQUITAS – Use Cases**

#### Healthcare

Fair tool supporting the diagnosis phase in pediatric dermatology diseases

Fair classification of ECG traces as symptomatic or normal



#### **Human Resources** Fair AI assisted recruiting system to target the cognitive and structural



bias associated with the recruiting process

Assess of existing algorithm exploited for selection of candidates

#### **Socially Disadvantaged Groups**

Fair AI system to detect and assess risk for child abuse and neglect within hospital settings

#### Fair AI system to detect educational disadvantages





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## **ADECCO USE CASES**

### **USE CASE HR1**: Bias free AI assisted recruiting

### system

- **Recruiting Workflow**
- **Candidate Registration and Application**
- Dataset

### **USE CASE HR2**: Assess and repair job-matching AI assisted recruiting tool to mitigate gender and other bias

- Candidate Platform
- Algorithm





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### Human resources use cases

Employers and employees ideally aim at the fairest possible selection and hiring process. Ensure a bias-free recruitment process also by using AI system, is fundamental, but many concerns arise around the exploitation of AI in hiring processes as examples of "predictive bias" (when an assessment systematically over- or under-predicts scores for a particular group) have occurred, not only leading to discriminatory or otherwise unfair outcomes, but also affecting access to the labour market for certain groups.

Two of the AEQUITAS use cases are devoted to the human resources domain, with a focus on selection processes such as hiring and candidate selection: Development of fair Al-assisted recruiting system to target the cognitive and structural bias associated with the recruiting process (fairness-by-design) Targeting of cognitive and structural bias that might be associated with existing Al-assisted hiring systems (assess and repair)

related to: gender, age, race.



#### Use cases will be focused in analysing the potential presence of biases in the hiring procedures



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# USE CASE HR1

### **Bias free Al assisted recruiting system**



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## **Bias free Al assisted recruiting system**

This use case is based on the analysis of the dataset related to the recruitment process in Adecco: Generation of work orders through the IRP system OLE', Publication of job offers through nCORE, • Application of candidates through Adecco.it

features of suitable candidates' profiles that are currently analysed in person by the recruiters and eventually outsourced at the relevant companies.

recruiting process finding the optimal form of human-machine collaboration.



- The dataset contains all the information for the recruiting process, from the skills and requirements of job adds to the
- Goal: Develop a fair AI assisted recruiting system to target the cognitive and structural bias associated with the



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### **Shared Dataset**

The dataset shared contains the whole information set for ~21k candidates.



21k Candidates (CVs and skills data) 15k Job position (Job posts)

## Dataset is created leveraging a single day extraction from both input data (i.e. candidate info) and output

.e. recommendations)







200k Recommendations (Direct and Reverse matching)



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## Input data - How to feed the algorithm







# USE CASE HR2

### Assess and repair job-matching Al assisted recruiting tool to mitigate gender and other bias



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## Job-matching Al assisted recruiting



Goal: Target the cognitive and structural bias that might be associated with existing assisted hiring systems. The analysis of the tool will make it possible to detect and assess possible biased outcomes resulting from the algorithm/software and the human expert in the selection of candidate.



This case study is based on the analysis of the Candidate Platform a new system of AI for the Adecco **Group recruiting process.** 

**Candidate Platform is in the testing phase, and** in the next future will be used in The Adecco **Group branches to automatized the extraction** of suitable candidates' profiles in relations to job offers and vice versa.



















### Candidate registration and application





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### Intro to candidate registration

Every person can insert his/her CV in Adecco DB registering a personal account in <u>www.Adecco.it</u>

Usually the candidate inserts the CV while doing an application to a job offer, but he/she can do it just to be visible in the Adecco data base. Each Candidate can update the CV entering in his/her account.



#### **CV REGISTRATION**

Some data are mandatory (like email, name and surname and CV in attachment), some other are not mandatory (like skills, ath of studios

#### **CV EVALUATION**

The Recruiter receives an email with the notification of the application and evaluate the candidate reading the CV.

#### **FIRST CONTACT**

If the Recruiter thinks that the Candidate can be eligible for that job, he/she proceeds to contact him/her to arrange an interview.

#### HIRING

The client select his/her preferred candidate and we proceed with the hiring

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### **Personal data**

#### Adecco

### Curriculum vitae

Consulta le nostre video pillole di consigli pratici per cercare lavoro. \* I campi indicati con l'asterisco sono obbligatori.

#### Dati personali

Nome \star

Cognome 🗱

Codice fiscale \*

#### Dati di contatto

Indirizzo 🔸 Comune \* Provincia CAP \* Cellulare \* ltaly +39

email \*

elena.cantiani@me.com



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### Job interests

#### Professioni di interesse ()

\* Campo obbligatorio

Per specificare le professioni di tuo interesse, clicca "inserisci" e digita le informazioni richieste.





#### Categoria professionale

Digita una parola inclusa nella professione ricercata e clicca sull'icona

Q

#### Area professionale

- -- Seleziona l'area professionale --
- -- Seleziona l'area professionale --
- Commerciale, Vendite, Marketing
- HR, Acquisti, Segreteria, Call center
- Ingegneria
- IT e Digital
- Legale, Finanziario, Assicurativo, Bancario
- Medico, Farmaceutico, Scientifico
- Produzione, Industria, Logistica
- Ristorazione, Alberghiero
- Turismo, Moda



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### **CV** and career information

#### CV e lettera di presentazione 🕠

#### \* Campo obbligatorio

Per allegare il tuo CV e aggiungere anche la lettera di presentazione, clicca su Inserisci. I file possono essere in formato .doc, .docx, .txt, .pdf, .gif, .jpg, .jpeg, .odt, di massimo 3000Kb.



#### Filiale di riferimento 🕕

\* Campo obbligatorio

Clicca su "Seleziona" per scegliere la filiale piu' vicina, sarai contattato per un primo colloquio.

Provincia

Filiale

Seleziona

Cassa Integrazione Ordinaria In contratto di solidarietà NASpl Pensionato Reddito di cittadinanza



#### Situazioni lavorative particolari 🕠











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### **Recruiting Workflow**



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### **Recruiting and Selection Process**

#### ANALYSIS AND **DEFINITION OF NEEDS**

Analysis and definition of the customer's needs in terms of skills, seniority, effort, times, ...

#### **SOURCING & SCOUTING**

Active search for candidates: Verification of coverage of requirements with internal resources, Publication of announcements

### **CRM Input**

### **Cloud HR Automation Output**

INPUT A WORKORDER	CANDIDATE DB	JOB OFFER	
The WorkOrder entity is filled in the system	The recruiter search in the data base if some candidte match with the requirement. He/Her can use more than 30 searching criteria	If any candidate match, the recruiter publish a job offer	Ca to car



First interview done by REC to evaluate the general profile, his/her interest for the job. The output is a short candidate profile.

#### APPLICATION

indidates can apply o the job offer and register their CV in the data base.

**CANDIDATE SHORT LIST** 

The REC shares the short list of candidates with the Client who decided which candidates want to meet

After the final interview with out clients, the best candidate is hired.

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## AEQUITAS – The Framework (1)

Fair By Design Methodology



GitHub repo link

PHASE Meta-Methodology Sub-Methodologies



## **AEQUITAS – The Framework (2)**

AI Fairness Canvas was developed as an interactive exercise to be included in educational materials. This exercise is aimed at AI developers and researchers, encouraging them to explore bias-related questions and identify actions to address these issues in their projects.

#### Scope of the project regarding biases

Objective: Clarify what constitutes bias in the context of your AI project.

#### Questions:

1. What is the intended purpose of your AI model? 2. Who are the end users, and how diverse are

they?

3. Are there historical, cultural, or systemic factors that might influence the training data or model behavior?

Objective: Ensure the training data represents diverse perspectives and minimizes bias.

#### Questions:

 Is the data representative of the target population?

2. Are there imbalances or gaps in the data about representing specific groups? 3. Were the data labeling processes reviewed for subjectivity or inconsistency?

Objective: Train the model to reduce biases and ensure fair outcomes.

1. Do you use the fairness metrics in evaluation (e.g., demographic parity, equalized odds)? 2. Do you measure disparities in predictions across different demographic groups?

#### Data

#### Model

### Outputs Objective: Foster transparency and shared responsibility. Questions: What decisions do you document regarding bias mitigation strategies. 2. Do you Involve diverse teams in decision-making processes? 3. Do you provide training to developers on ethical Al practices? 4. Do you share findings with external stakeholders for feedback? 5. Do you publish bias mitigation strategies and results openly to encourage trust?

### **AEQUITAS – AI Trustworty Requirements**

It is essential to bridge the gap between the technical, legal, and social domains of AI fairness. AEQUITAS applies various methodologies to integrate social, legal, and ethical notions of AI fairness into its engines.



## **AEQUITAS – Beyond The Project 1**

The EU AI Act establishes a comprehensive regulatory framework for AI development, particularly relevant to your HR-focused project on bias mitigation. Here are 5 key points to highlight for doctoral researchers:

#### **1.** Risk-Based Classification & HR Implications

The Act categorizes AI systems by risk level, with HR/recruitment tools classified as high-risk. This means:

- Mandatory bias testing throughout development cycles
- Documentation requirements for training data provenance
- Continuous monitoring for discriminatory outcomes post-deployment

#### **3. Human Oversight Requirements**

The Act enforces human-in-the-loop controls:

- Recruiters must validate AI recommendations before final decisions Systems must allow human override of algorithmic outputs
- Audit trails required for all AI-assisted decisions

#### 5. Accountability & Redress Mechanisms

**Establishes novel governance structures:** 

- Mandatory impact assessments for fundamental rights
- Clear liability channels for bias-related harms
- Right for candidates to request decision reviews



#### 2. Transparency & Explainability Mandates

**For recruitment AI systems:** 

Decisions must be explainable to both HR professionals and candidates Technical documentation must disclose system limitations

Real-time operation transparency for users interacting with AI

#### **4. Bias Mitigation Obligations**

Specific to your project's focus:

- Training datasets must represent diverse demographics
- Regular fairness audits using standardized metrics
- Obligation to correct identified biases within defined timelines

















### **AEQUITAS – Beyond The Project 2**

### Developing auditable ML architectures and bias quantification frameworks, with an approach tiered to regulatory framework, encourages targeted R&D investments while maintaining ethical guardrails, making it a crucial consideration for AI research roadmaps.









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### Consortium



















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### Thank you

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