Mapping out the emotional AI ecology in Japan:

Preliminary insights from semi-structured interviews of top

Japanese AI companies

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This brief report reflects on the semi-structured interviews conducted online from January 15 to February 10, 2021. All interviews are recorded with the consent from the interview subjects. The subjects were also explained they could freely dismiss any questions or terminate the interview at any point of their own choosing. In the end, the interviews lasted from 30 to 45 minutes each. This study has received ethical clearance from the university's ethics committee.

The interview subjects were asked a series of questions covering four major topics: (1) General explanations of their technologies, their applications and relevant industry; (2) Data management and algorithmic explicability; (3) Rules and trusts: guarding against biases, protecting personal data ;(4) Minimizing harms and misuse. The questions mirror the ones that were asked by UK emotional AI researchers [1].

Table 1 introduces the companies and our interview subjects.

	Company name	Interview subject	Company introduction
1.	TalentA	SVP, Chief Financial Officer	The exclusive distributor of HireVue's AI-driven Video Interviewing and pre-hiring system.
2.	IBM Global Business Services	Talent and Engagement Associate Partner	Selling algorithms powered by IBM Watson to optimize the flow of human resource management.
3.	Preferred Networks	PFN Fellow,	Using cutting-edge deep learning technologies to create real-time sensing of the physical world, making devices intelligent and computable.
4.	WACUL	CEO	Using machine learning to optimize websites based on analytics of consumer behaviors.
5.	Empath	Co-founder and CSO	Empath uses emotional AI to detect 4 emotions which are joy, calm, anger and sorrow, besides an energy point. Their products have been used by more than 500 customers over 40 countries.
6.	Talented People Laboratory Inc.	CEO	Providing consulting services to companies and job seekers about important trends in human resource management in Japan.
7.	Business Research Lab	CEO	Providing consulting services to companies and job seekers about important trends in human resource management in Japan.
8.	ELSYS JAPAN	CEO	A partner of ELSYS Corp, the Russian company that sell technologies that detect emotions from head movement and facial expressions.

Major findings

Opportunities: A nascent field

All companies recognize emotional AI technologies, in particular, and AI technologies, in general have many potential applications, thus, benefits for Japanese society. First, AI technologies can make the workplace safer and more engaging [2]. Preferred Networks are currently developing deep learning algorithms to make assembly lines and factory floors safer analyze video camera images and provide real-time updates. Empath's emotional AI can give managers real-time updates on the emotional state of call-center operators in order to manage the conversation with the clients better. Thus, it can improve employee's satisfaction and engagement with their jobs. The AI-driven security system developed by ELSYS can potentially reduce crime.

Second, AI technologies can be cost-effective. HireVue's interview video analytics could potentially save companies a lot of time to screen suitable applicants. IBM Global Business Services' tech solutions powered by IBM Watson can help companies keep hold of and develop their talents by offering them engaging training courses and matching their characteristics with a suitable workplace. Preferred Networks' AI can teach robots to move through space and avoid obstacles, which can reduce the operating cost at the factory floors.

Third, AI technologies can maximize profits. Preferred Networks' deep learning algorithm can be applied to optimize interior design of retail stores and shopping centers.

Threats

Legal gray zones

All interviewees share concerns about the legal gray zones concerning Japanese legal framework of algorithmic governance and personal data protection law. According to the CEOs of Talented

People Laboratory and Business Research Lab, the adoption of AI technologies in human resource management in Japan is rather slow compared to Western countries, due to the ambiguity of regulation relating to algorithmic governance and personal data protection. Both the AI engineers and the users are afraid of moving forward with the technologies when there are no clear rules of governing the technologies' usage.

One example of a lack of regulation is ELSYS Japan's representative told us that in many airports and convenient stores that use the emotional surveillance technology powered by their *Vibrainimage* system did not put up the signages stating such system is operational. Empath's algorithms can be repurposed to become lie detectors if they have access to data from criminals. Yet, the CSO claims they decline government and military offers for ethical reasons.

Cultural obstacles

First, all interview subjects claim that Japanese society poses a particularly difficult cultural barrier for the adoption of AI technologies. Japanese society seems to accept the presence of robots very well but they seem to be slower to accept AI systems that might optimize the workplace, for example. In the words of IBM Global Business Services' representative, things that are perceived to pose a threat for the traditional ways of doing things are less likely to be accepted in society.

Indeed, there is a lack of Japanese society lacks AI-readiness. It is mostly down to the cultural factors, more than anything else. For example, even with COVID-19 pandemic, teleworking still not works, fax machines sell well because people resist moving away from the stamp (hanko).

TalentA, Business Research Lab, and Talented People Laboratory said there is no standard of collecting and treating data for human resource management. This trend is hard to change.

Effecting cultural changes require a deep understanding of not only the cultural/ideological setting [3, 4] but also how it influences the behaviors of each individual [5,6,7].

Intelligibility/Complexity

The companies' representatives are also concerned about the explicability of the decisions of the AI systems. However, the need for explicability varies from field to field.

It is especially salient in HR, because to make judgement about career advancement of a person has a huge implication for him/her life. According to Business Research Lab and Talented People Laboratory, this suggests a need to more dialogue between AI engineers and HR specialists. HR specialists can provide the AI engineers expert knowledge about the types of data that could help predict future high performers, or any high-level intuitive abstract models used by HR specialists to select candidates.

For marketing, the website optimizing algorithm such as that of WACUL or Preferred Networks' retail store optimization, there is less need to explain the algorithm. The purpose of the algorithm is fairly clear: to maximize the traffic of a website or to optimize interior design of retail store. The data are also straightforward: behavioral data of whether a person buy a product given their viewing history or whether people move to a specific place in a store.

Accuracy – Privacy – Trust

All companies' representatives are more or less sensitive of the potential inaccuracies and bias of their AI products. TalentA sells algorithms initially designed in the US with US psychologists making the questions that are "best suited for finding the future good performers" in Japan. The TalentA's representative states that to improve accuracy, first, they need to change some of questions to make them more appropriate for Japanese contexts. Second, using the revised set of

questions, they have built database of 1,000 video interviews of successful local job applicants and are testing the algorithms on this dataset.

Preferred Networks preferred high-quality locally curated datasets over unstructured massive datasets when building their AI systems. Empath uses in-house data annotators to give emotion labels for voice texts in order to create high-quality datasets that suit the Japanese customers. ELSYS Japan might be on the only exception. They sell the system that is trained by data from a Russian experiment, and there have only been plans to conduct the same experiment for the Japanese subjects. These developments and business practices mean that we can only trust the AI incrementally [8].

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