RESEARCH INSTITUTE of SCIENCE and TECNOLOGY for SOCIETY (RISTEX)
2022 Research and Development Implementation Report

"Human-Information Technology Ecosystem"

Research and Development Focus Area

"Emotional AI in Cities: Cross Cultural Lessons from UK and Japan on Designing for An Ethical Life"

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CONTENTS

1. R&D Project Name

Emotional AI in Cities: Cross Cultural Lessons from UK and Japan on Designing for An Ethical Life

2. Specific Details of Research and Development Conducted

Timeline	2020			2021			2022			2023		
	0-4	5-8	9-12	13-16	17-20	21-24	25-28	29-32	33-36	37-40	41-44	45
Stage 1	Literature Review: Mapping ecology of emotional AI											
Stage 2		Collect data: Commerce (UK done/Japan done)										
Stage 3		Collect data: Security (UK done/Japan done)										
Stage 4		Collect data: Civic discourse (UK/Japan done)										
Stage 5					National Surveys: 1. *Perception of emotional AI in various sectors* (UK and Japan done). 2. *Attitude toward healthcare AI in Japan* (Japan done)							
Stage 6						Four citizen workshops: UK & Japan done						
Stage 7	Cross-cutting themes for data collection, analysis, and dissemination: Diversity, age, health, ethics											
Stage 8											Policy workshop UK & Japan	

2-1. Research and Development Goals

1. *Understand what it means to live ethically and well with EAI in cities, by understanding the emergence of EAI in cities; its social, spatial and temporal implications; and engaging with diverse EAI and smart city stakeholders in UK-Japan.*

2. *Raise awareness of UK-Japanese stakeholders (technology industry, policymakers, NGOs, security services, urban planners, media outlets, citizens) on how to live ethically and well with EAI in cities.*

3. *Advance collaboration between UK-Japan academics, disciplines and stakeholders in EAI.*

4. *Undertake comparative cross-cultural UK-Japan analysis on how EAI impacts commercial, security and civic contexts.*

5. *Ascertain how EAI may impact security stakeholders and organizations in the new media ecology via interviews with these stakeholders and case studies in UK-Japan.*

6. Formulate governance approaches for collection and use of intimate data about emotions in public spaces (e.g. privacy laws, ethics frameworks, technology standards, design-led regulation) to understand how these guide EAI developments, in order to build a repository of best practice on EAI in cities.

7. Advance novel scientific insights across surveillance studies, new media, information technology law, security & policing studies, science & technology studies, affective computing.

8. Constructing an online think tank to provide impartial ethical advice on EAI and cross-cultural issues to diverse stakeholders during and after the project.

2-2. Implementation and Results of the Research and Development

(1) Schedule

Timeline	2020			2021			2022			2023		
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(2) Implementation details

1. Understand what it means to live ethically and well with EAI in cities, by understanding the emergence of EAI in cities; its social, spatial and temporal implications; and engaging with diverse EAI and smart city stakeholders in UK-Japan.

In 2022, we have devised a precise methodology for surveying citizens' perceptions of

social and ethical implications of emotional AI in cities. This method paper is now available at MethodsX (published by ScienceDirect Elsevier, Scopus, Q1). This method is based on a combination of the technological acceptance model and the moral foundation theory.

We are analyzing two surveys based on this method, one for the general applications of emotional AI, one for AI in medical setting, have been distributed with the help of an online market research company. Some results from the surveys are written into manuscripts and are submitted to scientific journals for peer-review.

The statistical analyses have been conducted on these two datasets and we are in a process to compare the quantitative results with the qualitative results from citizen workshops and interviews in the last two years.

2. *Raise awareness of UK-Japanese stakeholders (technology industry, policymakers, NGOs, security services, urban planners, media outlets, citizens) on how to live ethically and well with EAI in cities.*

After each publication from our team, we have generated public announcements via media outlets and our universities' websites, social media outlets, to promote the results and important implications for the how to live well and ethically with EAI in cities.

Our research on the non-conscious data gathering done by emotional AI has been captured in major media outlets in many different languages and countries:

https://www.theguardian.com/global-development/2023/may/12/why-would-we-employ-people-experts-on-five-ways-ai-will-change-work
is a major British international newspaper published in the UK

- **https://www.eurekalert.org/news-releases/962490**
  EurekAlert is published by American Association for the Advancement of Science (AAAS)
- **https://tech4future.info/intelligenza-artificiale-riconoscimento-emozioni/**
  Tech4Future is a newspaper registered at the Court of Brescia, Italy (registration n. 10/2021), published by ENNEBI
- **https://techxplore.com/news/2022-08-emotional-ai-gen-attitude-technology.html**
  The Science X network is one of the largest online communities for science-minded people. Science X publishes approximately 200 quality articles every day, offering some of the most comprehensive coverage of sci-tech developments world-wide.
- **https://aithority.com/natural-language/emotional-ai-how-cultural-factors-influence-gen-z-attitude-toward-technology/**
  AiThority.com covers the latest news, trends, insights and analysis related to AI ML, Blockchain and 1500+ emerging tech categories from around the globe.

- **https://news8plus.com/emotional-ai-and-gen-z-the-attitude-towards-new-technology-and-its-concerns/**
  News8plus.com is a news website based in India.
- **https://dataconomy.com/2022/08/gen-z-is-positive-toward-emotional-ai/**
  Dataconomy is the leading portal for news, events, and expert opinion from the world of data-driven technology. Founded in Berlin, a hub for data science innovation, we provide a global network of industry-renowned contributors and local communities all across Europe. We focus on industry giants and disruptive startups alike, looking at only the most interesting applications of data technology.
- **https://www.unite.ai/new-study-observes-acceptance-of-emotional-ai-among-gen-z/**
  Unite.ai is a completely decentralized organization with a team that currently offers news, interviews, and access to the best AI tools – But this is only the beginning of a multilayered masterplan.
- **https://techround.co.uk/news/the-socio-cultural-influence-of-emotional-ai-on-gen-z/**
  TechRound is the voice of UK startups and is the UK's fastest-growing platform for startups, UK and international businesses, entrepreneurs and tech businesses, as well as anyone seeking to gain exposure to the UK startup market.

3. Advance collaboration between UK-Japan academics, disciplines & stakeholders in EAI.

We have been in dialogue with the UK team and learn a great deal regarding the methodologies such as how to conduct design fiction workshops, surveys, and interviews. Based on such discussions, we were able to conduct surveys and interviews and workshops that were culturally sensitive.

We were able to publish a book chapter together in a book published by Wiley titled Machine Learning and the City:

Bakir, V., Ghotbi, N., Ho, T.M., Laffer, A., Mantello, P., McStay, A., Miranda, D., Miyashita, H., Podoletz, L., Tanaka, H. and Urquhart, L. (2022). Emotional AI in Cities . In *Machine Learning and the City*, S. Carta (Ed.). https://doi.org/10.1002/9781119815075.ch51

4. Undertake comparative cross-cultural UK-Japan analysis on how EAI impacts commercial, security and civic contexts.

5. Ascertain how EAI may impact security stakeholders and organizations in the new media ecology via interviews with these stakeholders and case studies in UK-Japan.

For goals No. 4.5., we are conducting ongoing discussions and dialogues with the UK team and exchanging insights from interviews and surveys. We have started to triangulate our findings from three methodological sources: surveys, interviews, and citizen workshops. The results are now being written into manuscripts and will be submitted in the course of 2023 for peer-review and consideration of publication.

6. Formulate governance approaches for collection and use of intimate data about emotions in public spaces (e.g. privacy laws, ethics frameworks, technology standards, design-led regulation) to understand how these guide EAI developments, in order to build a repository of best practice on EAI in cities.

We have started to publish several articles about the governance of emotional AI based on the insights from the empirical works. For example:

- **Mantello, P., Ho, MT. Losing the information war to adversarial AI. *AI & Soc* (2023). https://doi.org/10.1007/s00146-023-01674-5**
- **Ho, MT., Mantello, P. Smart technologies and how they create the reality feared by Orwell and Huxley. AI & Society(2023). https://doi.org/10.1007/s00146-023-01652-x**
- **Mantello, P., Ho, MT. Emotional AI and the future of well-being in the post-pandemic workplace. AI & Society (2023). https://doi.org/10.1007/s00146-023-01639-8**
- **Mantello, P. Ho, MT. Why we need to be weary of emotional AI. AI & Soc (2022). https://doi.org/10.1007/s00146-022-01576-y**

7. Advance novel scientific insights across surveillance studies, new media, information technology law, security & policing studies, science & technology studies, affective computing.

Again, based on the empirical works including interviews with stakeholders, multiple surveys and citizen workshops, we are able to develop our own methodology for creating survey questionnaire as well as generating thematic coding for future studies. This method paper is published in MethodsX (published by ScienceDirect Elsevier, Scopus, Q1).

- **Ho MT, Mantello, P., & Ho Toan (2023), An analytical framework for studying attitude towards emotional AI: The three-pronged approach, MethodsX, Elsevier. https://doi.org/10.1016/j.mex.2023.102149.**

8. Constructing an online think tank to provide impartial ethical advice on EAI and cross-cultural issues to diverse stakeholders during and after the project.

Our website ethikal.ai is up and running and has received attentions from scholars and students.

(3) Outcomes

Research outcomes:

1. **Bakir, V., Ghotbi, N., Ho, T.M., Laffer, A., Mantello, P., McStay, A., Miranda, D., Miyashita, H., Podoletz, L., Tanaka, H. and Urquhart, L. (2022). Emotional AI in Cities . In *Machine Learning and the City*, S. Carta (Ed.). https://doi.org/10.1002/9781119815075.ch51**
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5. **Rethinking technological acceptance in the age of emotional AI: Surveying Gen Z (Zoomer) attitudes toward non-conscious data collection, *Technology in Society* (Q1 sociology and political science). https://doi.org/10.1016/j.techsoc.2022.102011**
6. **The Ethics of Emotional Artificial Intelligence: A Mixed Method Analysis.**
7. **Understanding the acceptance of emotional artificial intelligence in Japanese healthcare system: A cross-sectional survey of clinic visitors' attitude. *Technology in Society.* https://doi.org/10.1016/j.techsoc.2022.102166**
8. **Why we need to be weary of emotional AI? AI&Society (Q1 Philosophy). https://doi.org/10.1007/s00146-022-01576-y**
9. **What is a Turing test for emotional AI? *AI&Society* . https://doi.org/10.1007/s00146-022-01571-3.**
10. **Disillusioned with artificial intelligence: a book review. *AI&Society* https://doi.org/10.1007/s00146-022-01588-8**
11. **Thinking about the mind-technology problem. *AI&Society.* https://doi.org/10.1007/s00146-022-01588-8**
12. **An analytical framework for studying attitude towards emotional AI: The three-pronged approach, MethodsX, Elsevier. https://doi.org/10.1016/j.mex.2023.102149.**
13. **Machines that feel: Upgrading the technological acceptance model with mindsponge model of information filtering. Under 2nd Review at *Humanities and Social Sciences Communications* (Q1, SSCI Web of Science, Scopus)**
14. **Machines that teach us how to feel: Understanding social and ethical perceptions of emotional AI in education and toys from Japanese perspectives. Under 2nd Review at *Heliyon* (Q1, SSCI, Web of Science, Scopus, Impact Factor 2.7)**

(4) Summary of results for the year in question / Issues for the next year

Summary of Results

- Completed work packages up until the final policy report.
- Conducted national health survey.
- Finished interviews with main stakeholders.
- Published 14 articles in mainly Q1 journals.
- Keynote Speaker at two international conferences.
- Attended Robot Workshop at National Technical University of Prague

Items to be finished for extension year up to September 2022

- Finalization of Policy report.
- Collaborative writing between UK and Japan teams.
- Press interviews
- Public Speaking Engagements
- Attendance at Conferences
- Final interviews
- Final archival research at technical libraries involved in AI.
- Completion of online think tank with information for key stakeholders on best practices.

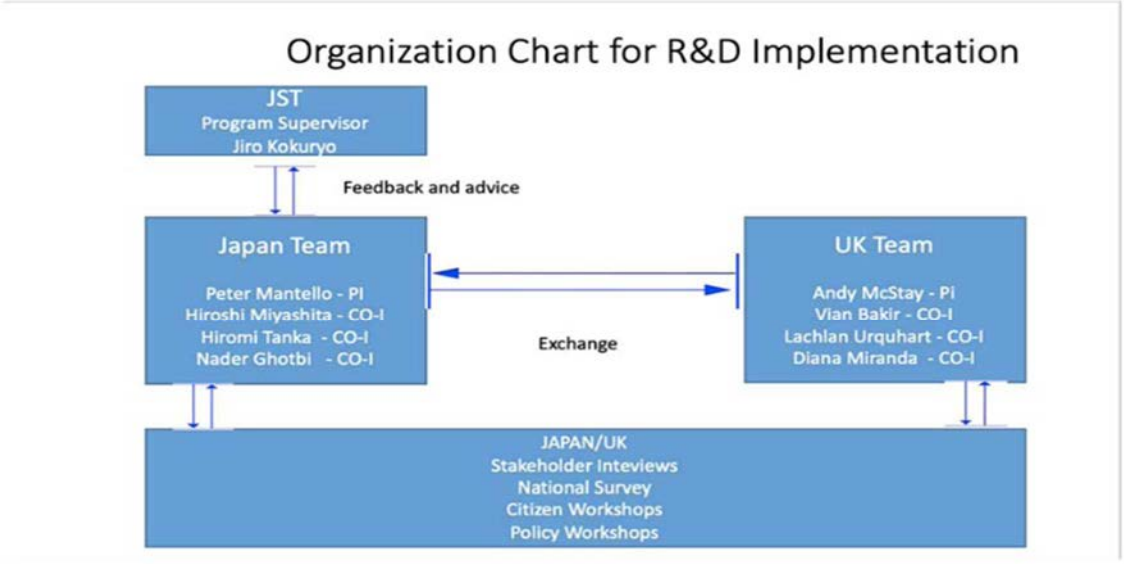
2-3. Meetings and Other Activities

July 23	UK/JAPAN MEET-UP	ZOOM	Team Status Reports
Sept. 10	UK/JAPAN MEET-UP	ZOOM	Team Status Reports
Dec. 7	UK/JAPAN MEET-UP	ZOOM	Team Status Reports
March 7	UK/JAPAN MEET-UP	ZOOM	Team Status Reports

3. Application and Deployment Status of Research and Development Outcomes

N/A

4. Research and Development Implementation Framework



5. Participants in the Research and Development

Name	Affiliated institution	Affiliated department	Post (Status)
Peter Mantello	APU	APS	
Nader Ghotbi	APU	APS	
Hiroshi Miyashita	Chuo University	Policy Studies	
Hiromi Tanka	Meiji University	Digital Media And Gender	
Tung Manh Ho	APU	APS	

6. Presentation and Communication Status of R&D Outcomes, Outreach Activities, etc.

6-1. Symposiums, etc.

N/A

6-2. Communication with the Public, Outreach Activities, etc.

(1) Publications such as books, booklets, DVDs, etc.

(2) Establishment and operation of web media

- **https://www.eurekalert.org/news-releases/962490**
  EurekAlert is published by American Association for the Advancement of Science (AAAS)
- **https://tech4future.info/intelligenza-artificiale-riconoscimento-emozioni/**
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- **https://www.unite.ai/new-study-observes-acceptance-of-emotional-ai-among-gen-z/**
  Unite.ai is a completely decentralized organization with a team that currently offers news, interviews, and access to the best AI tools – But this is only the beginning of a multilayered masterplan.
- **https://techround.co.uk/news/the-socio-cultural-influence-of-emotional-ai-on-gen-z/**
  TechRound is the voice of UK startups and is the UK's fastest-growing platform for startups, UK and international businesses, entrepreneurs and tech businesses, as well as anyone seeking to gain exposure to the UK startup market.

(3) Invited lectures at symposiums etc. other than academic conferences (see 6-4.)

6-3. Paper Publications

(1)Peer reviewed (_____articles)

1. **Bakir, V., Ghotbi, N., Ho, T.M., Laffer, A., Mantello, P., McStay, A., Miranda, D., Miyashita, H., Podoletz, L., Tanaka, H. and Urquhart, L. (2022). Emotional AI in Cities . In *Machine Learning and the City*, S. Carta (Ed.). https://doi.org/10.1002/9781119815075.ch51**
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●Domestic journals (_____articles)

●International journals (_____articles)

(2) Non peer-reviewed (_____articles)

6-4. Oral Presentations (presentations at international conferences and major domestic conferences)

(1) Invited lectures International conferences 2 times, International conferences

1. Mantello Peter and Manh-Tung Ho. Emotional AI applications in our daily life. Presentations at Institute of Philosophy, Vietnam Academy of Social Sciences and AIoT Lab, Phenikaa University, Hanoi, Vietnam. (February 8-9, 2023).
2. Peter Mantello. Ethical AI in public spaces. Presentation at the Prague City Data Congress (Sep 19, 2022). https://www.youtube.com/watch?app=desktop&v=wKvUE1y_gr8

(2) Oral presentations (Domestic conferences __times, International conferences times) ・
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(3) Poster presentations (Domestic conferences times, International conferences times)

6-5. Newspaper/TV Coverage, Posting, Awards, etc.

(1) Newspaper coverage / posting (_____times

(2) Awards (_____times)

(3) Other (_____times)

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6-6. Intellectual Property Applications

N/A