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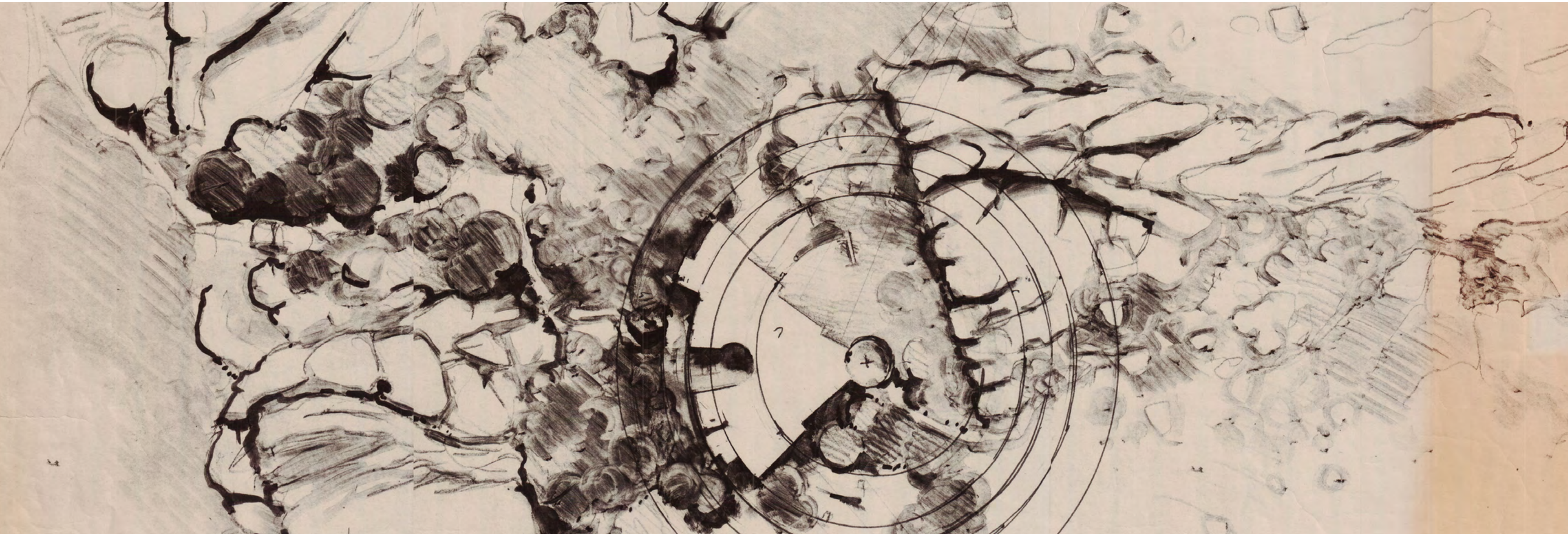

diségno

15.2024

REPRESENTATION INSIDE AND OUTSIDE THE LANDSCAPE

diségno

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Alberto Ponis, sketch for Casa Hartley, detail.

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Symposium REAACH 2024

Roberta Spallone

REAACH 2024 is the fifth edition of the *REAACH Symposium* (fig. 1), an event that, over the two days of study on October 8 and 9, 2024, featured contributions from international scholars on the topic of the challenges of the discipline of Representation in light of the disruptive and interconnected phenomena of Artificial Intelligence (AI) and eXtended Reality (XR).
The symposium, first held in 2020, was born online because of the pandemic, after some postponements in the hope of keeping it in-person. The organizational simplicity, the possibility of reaching scholars in every part of the world, the modularity of the program, and the cost containment have, over the years, consolidated this mode of holding, coordinated by the three Chairs, Andrea Giordano, Michele Russo, and Roberta Spallone, at the DICEA (Civil, Environmental and Architectural Engineering) of the University of Padua. Following a call for extended abstracts, the proposals are selected for oral or video presentation at the symposium. The next phase involves the development of the research according to the directions of the Scientific Committee, up to the production of an extended contribution that, if accepted by the reviewers, is collected as a chapter in a collective volume, published in the 'Digital Innovations in Architecture, Engineering and Construction series' of Springer Nature.
While the annual holding of the symposium imposes a tight cyclicality in its organization and subsequent publication is the outcome of the discussion and directions of the Scientific Committee, it has the advantage of reading and interpreting the trends imposed by technologies and the ability of scholars to govern them, establishing a stringent link between the proposals of previous years and the new ones.
The survey of keywords – AI and/or XR are mandatory to target contributions appropriately; others should be drawn from a 'galaxy' of terms conceptually related and referring to the different declinations of the discipline of Representation – and the comparison between them in the successive editions of the symposium, allow for the identification of established and new trends in the studies presented.
In the inaugural presentation of the *REAACH Symposium 2024*, a brief *excursus* was made between themes and directions of the different editions in light of the previous considerations.
The first *REAACH-ID Symposium 2020* aimed to carry out a recognition, a fundamental one, of the research carried out by Representation scholars in Italy that explored new interests and intersections in the field of Artificial Intelligence and Augmented Reality (AR), outlining possible interdisciplinary collaborations and transdisciplinarity. The acronym *REAACH-ID*, conceived for the event, revealed the meaning of the initiative ('Representation for Enhancement and management through Augmented reality and Artificial intelligence: Cultural Heritage and Innovative Design').
The second step of the 2021 debate set the ambitious goal of exploring the new boundaries that, after just one year, AR and AI marked in Cultural Heritage and Innovative Design, opening up to international studies. That goal was achieved and surprisingly exceeded, thanks to the lymph provided by new proposals and scholars.
In the third *REAACH-ID Symposium* of 2022, it was observed that many of the topics addressed in the research corresponded to those listed in the Final Report 'Study on quality in 3D digitization of tangible cultural heritage: mapping parameters, formats, standards, benchmarks, methodologies, and guidelines', published in April 2022. In the last paragraph of the report devoted to 'Forecast Impact of Future Technological Advances', single points of attention in convergence

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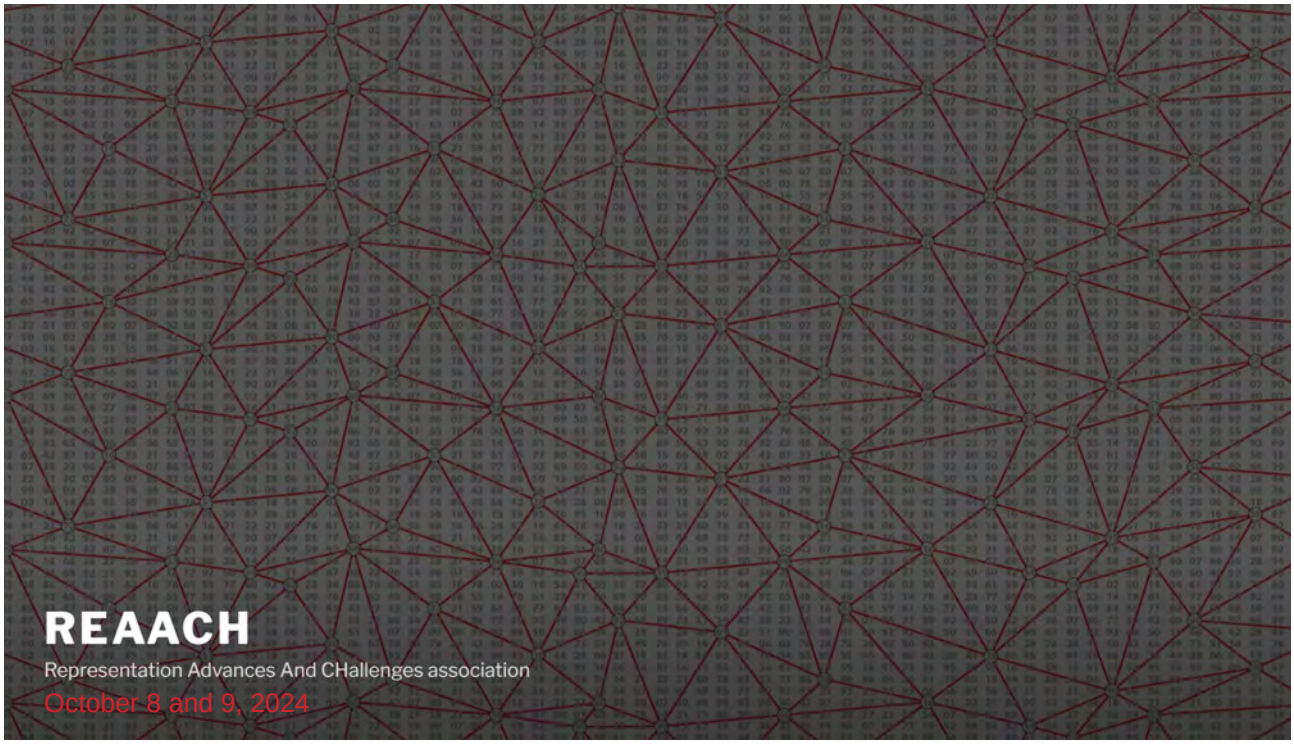

Fig. 1. Banner of the event.

with *REAACH-ID Symposium* topics were, among others, Extended Reality (AR, VR, MR), Metaverse, 5G, and the Continued Advancement of Mobile Technologies, BIM, HBIM, HHBIM, and the Digital Twin, Artificial Intelligence/ Machine Learning, Blockchain Technologies. In some studies, it also opened the big game of Generative Artificial Intelligence.

In 2023, the Symposium reconfigured its title to *REAACH* (REpresentation Advances And CHallenges), taking over the name of the REAACH Social Promotion Association (https://www.reaach.eu/) which had just been founded to direct its goals. The focus of the Symposium expanded to include the relationships of Representation with Artificial Intelligence and Extended Reality and a keywords scheme, the one discussed above, was structured to guide the construction of proposals. The rise of generative Artificial Intelligence was evident in both Cultural Heritage and Innovative Design.

The current *REAACH 2024* (https://www.reaach.eu/symposium-2024/) featured 63 selected contributions: 42 in oral form and 19 in video. In total, the contributions involved 194 scholars from five continents.

Two keynote lectures characterized the study days, broadening the perspectives of AI and XR. The first, given by Francesco Carota and Gustavo Garcia do Amaral, both professors at the School of Architecture and Design at the University of Kansas, was titled 'Revealing and Interpreting Complex Urban Patterns from Location Based Social Network Data. An Investigation into Chinese Stadiums in the Global South' the second, by Lauren S. Ferro, from CSIRO's Data61 research institute in Melbourne, 'XR's challenges and solutions for cybersecurity'.

Fig. 2. Word cloud of the event.

Eight sessions punctuated the two days, organized according to the call's macro-themes: AI&XR and Historical Sources, AI&XR and Heritage Routes, AI&XR and Museum Heritage, AI&XR and Classification/3D Analysis, AI&XR and Building Information Modeling, AI&XR and Building Monitoring, AI&XR and Shape Representation, and AI&XR and Education. Thirty-one contributions identified the keyword AI as characterizing among the mandatory ones, twenty-eight the keyword XR, and three the pair AI&XR. Among the other keywords, as noted by the word cloud in the figure 2, terms related to the world of digital representation and the fields of its current application emerge.

Author

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Eventi

Symposium REAACH 2024

Roberta Spallone

REAACH 2024 è la quinta edizione di *REAACH Symposium* (fig. 1)., evento che, nel corso di due giorni di studio, l'8 e il 9 ottobre 2024, ha visto i contributi di studiosi internazionali sul tema delle sfide della disciplina della Rappresentazione alla luce dei dirompenti e interconnessi fenomeni dell'Intelligenza Artificiale (*Artificial Intelligence*, AI) e della Realtà Estesa (e*Xtended Reality*, XR).
Il simposio, svoltosi per la prima volta nel 2020, nacque nel formato on-line a causa della pandemia, dopo alcuni posticipi decisi nella speranza di poterlo svolgere in presenza. La semplicità organizzativa, la possibilità di raggiungere studiosi in ogni parte del mondo, la modularità del programma, il contenimento dei costi, hanno negli anni consolidato tale modalità di svolgimento, coordinata dai tre *Chairs*, Andrea Giordano, Michele Russo e Roberta Spallone, presso il DICEA (*Civil, Environmental and Architectural Engineering*) dell'Università degli Studi di Padova. Le proposte, a seguito di una *call for extended abstract*, vengono selezionate per la presentazione orale o video in occasione del simposio. La fase successiva prevede lo sviluppo della ricerca secondo le indicazioni del Comitato Scientifico, fino alla produzione di un contributo esteso che, se accettato dai revisori, viene raccolto come capitolo di un volume collettaneo, pubblicato nella collana *Digital Innovations in Architecture, Engineering and Construction* di Springer Nature.
Lo svolgimento annuale del simposio se, da un lato, impone una serrata ciclicità nell'organizzazione e nella successiva pubblicazione, esito come detto della discussione e delle indicazioni del Comitato Scientifico, dall'altra, ha il vantaggio di leggere e interpretare i trend imposti dalle tecnologie e la capacità di governarli da parte degli studiosi, stabilendo un legame stringente fra le proposte degli anni precedenti e quelle nuove.
Il censimento delle parole chiave – AI e/o XR sono obbligatorie per indirizzare correttamente i contributi, altre vanno attinte da una "galassia" di termini concettualmente connessi e riferiti alle differenti declinazioni della disciplina della Rappresentazione – e il confronto fra esse nelle successive edizioni del simposio, consentono di far emergere tendenze consolidate e nuove negli studi presentati.
Nella presentazione inaugurale di *REAACH Symposium 2024*, alla luce delle considerazioni precedenti, è stato svolto un breve excursus fra temi e indirizzi delle differenti edizioni.
Il primo *REAACH-ID Symposium 2020* aveva mirato ad effettuare una ricognizione, fondamentale, delle ricerche svolte dagli studiosi della Rappresentazione in Italia che esploravano nuovi interessi e intersezioni nell'ambito dell'Intelligenza Artificiale e della Realtà Aumentata (AR), delineando possibili collaborazioni interdisciplinari e transdisciplinarità. L'acronimo *REAACH-ID*, ideato per l'evento, rivelava il significato dell'iniziativa (*Representation for Enhancement and management through Augmented reality and Artificial intelligence: Cultural Heritage and Innovative Design*).
Il secondo step del dibattito, quello del 2021, si pose l'obiettivo ambizioso di esplorare i nuovi confini che, dopo appena un anno, AR e AI segnavano negli ambiti del *Cultural Heritage* e dell'Innovative Design, aprendosi agli studi internazionali. Tale obiettivo, fu stato pienamente raggiunto e sorprendentemente superato, grazie alla linfa fornita da nuove proposte e nuovi studiosi.
Nel terzo *REAACH-ID Symposium* del 2022 si osservò che molti dei temi affrontati nelle ricerche, corrispondevano a quelli elencati nel *Final Report Study on quality in 3D digitisation of tangible cultural heritage: mapping parameters, formats, standards, benchmarks, methodologies, and guidelines*, pubblicato nell'aprile 2022. Nell'ultimo paragrafo del report dedicato al *Forecast Impact of Future Technological Advances* singoli punti di attenzione in convergenza con i topics di *REAACH-ID Symposium* erano, fra gli

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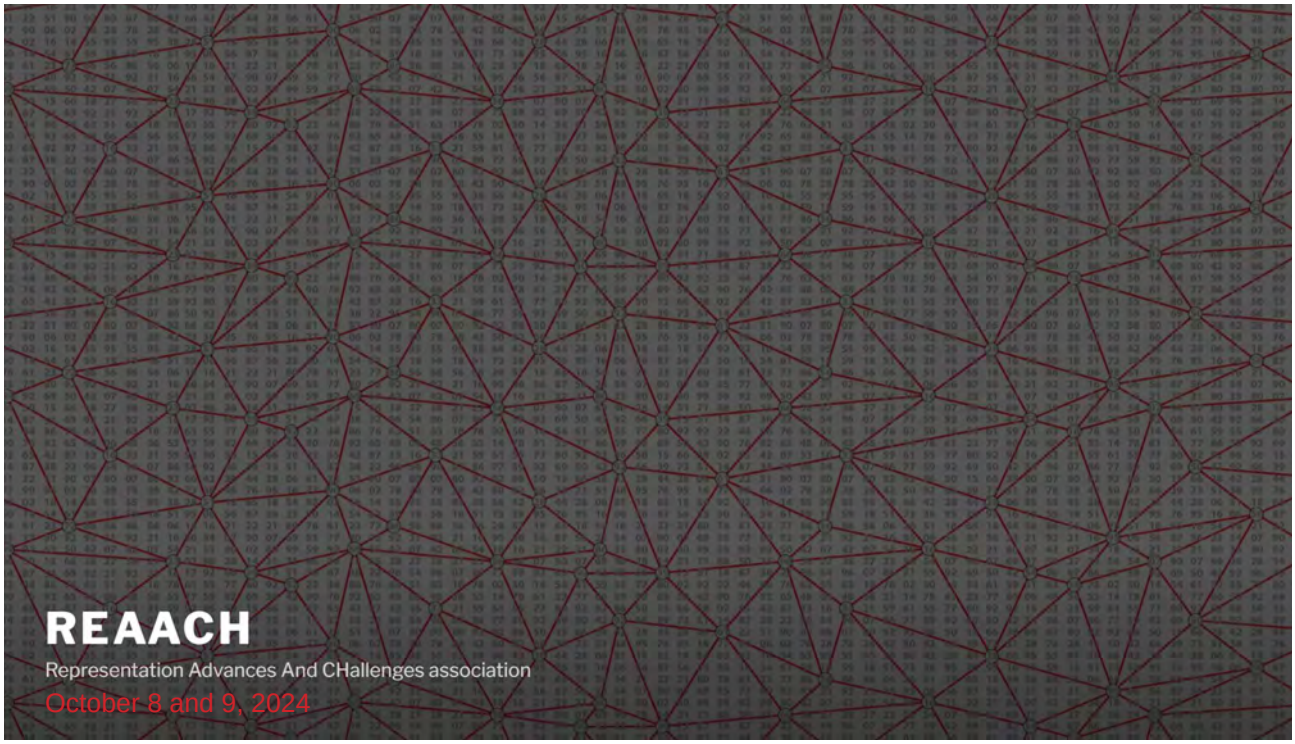

Fig. 1. Banner dell'evento.

altri, *Extended Reality* (AR, VR, MR), *Metaverse*, 5G and the *Continued Advancement of Mobile Technologies*, BIM, HBIM, HHBIM and the *Digital Twin*, *Artificial Intelligence/Machine Learning*, *Blockchain Technologies*. Si apriva, inoltre, in alcuni studi, la grande partita dell'Intelligenza Artificiale generativa.
Nel 2023, il Symposium riconfigurò il suo titolo in *REAACH* (*REpresentation Advances And CHallenges*), riprendendo la denominazione dell'Associazione di Promozione Sociale *REAACH*, (https://www.reaach.eu/) appena fondata per indirizzarne gli obiettivi. Il focus del *Symposium* si ampliò a includere le relazioni della Rappresentazione con l'Intelligenza Artificiale e la Realtà Estesa e venne strutturato uno schema di parole chiave, quello di cui sopra si è parlato, a guida della costruzione delle proposte. L'ascesa dell'Intelligenza Artificiale generativa si manifestava con evidenza sia nell'ambito del *Cultural Heritage* che dell'*Innovative Design*.
L'attuale *REAACH 2024* (https://www.reaach.eu/symposium-2024/) ha visto la presentazione di 63 contributi selezionati: 42 in forma orale e 19 in video. Complessivamente i contributi hanno coinvolto 194 studiosi dei cinque continenti.

Due *keynote lectures* hanno caratterizzato le giornate di studi, ampliando lo sguardo sulle prospettive di AI e XR. La prima, svolta da Francesco Carota e Gustavo Garcia do Amaral, ambedue docenti presso la School of Architecture and Design dell'University of Kansas, è intitolata *Revealing and Interpreting Complex Urban Patterns from Location Based Social Network Data. An investigation into Chinese stadiums in the Global South*, la seconda, da parte di Lauren S. Ferro, dell'istituto di ricerca CSIRO's Data61 in Melbourne, *XR's challenges and solutions for cybersecurity*.

Fig. 2. Word cloud dell'evento.

Otto sessioni hanno scandito le due giornate, organizzate secondo i macrotemi della call: *AI&XR and Historical Sources, AI&XR and Heritage Routes, AI&XR and Museum Heritage, AI&XR and Classification/3D Analysis, AI&XR and Building Information Modeling, AI&XR and Building Monitoring, AI&XR and Shape Representation, AI&XR and Education*.
Trentuno contributi hanno individuato la keyword AI come caratterizzante fra quelle obbligatorie, ventotto la *keyword* XR, tre la coppia AI&XR. Fra le altre parole chiave, come si nota dalla *word cloud* in figura 2, emergono i termini legati al mondo della rappresentazione digitale e ai campi della sua attuale applicazione.

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