

iREAL: Inclusive Requirements Elicitation for AI in Libraries to Support Respectful Management of Indigenous Knowledges

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01 Introduction

The Inclusive Requirements Elicitation for AI in Libraries to support respectful management of Indigenous knowledges (iREAL) aims to develop tools for libraries and cultural heritage institutions, and the Research Software Engineers (RSEs) that work with them, to centre Indigenous voices, rights and concerns in the AI/Machine Learning work they undertake.

The research team is constituted of both Indigenous members — Kirsten Thorpe (Australia - Worimi, Port Stephens), Lauren Booker (Australia - Garigal), Samantha Callaghan (Aotearoa New Zealand - Te Whānau a Apanui, Ngāti Kahungunu) and Abdenour Bouich (Tamazgha Algeria – ⵜⴰⴳⴷⵓⴷⴰⵢⵜ Amazigh) — and non-Indigenous members, project lead Paul Gooding, Rosie Spooner, Robin Wright and Monica Galassi. In addition, a software development team from King’s Digital Lab (KDL), Arianna Ciula, Miguel Vieira and Tiffany Ong are part of the wider project team.

02 Project activities and outputs

- Detailed literature review
- Workshop #1 - Immersive workshop on emancipatory and inclusive institutional practices
- Workshop #2 - Technology-focused workshop exploring existing Indigenous datasets and AI processing pipelines utilising a web-based dashboard designed and developed for the purpose of allowing workshop attendees to critique the model/s used and explore the datasets via collaborative experimental analysis
- A prototype model for inclusive requirements elicitation, published via KDL’s GitHub repository
- Engagement activities undertaken by the research team in their respective sectors
- A set of digital designs from an Indigenous designer
- Final symposium
- Final report

Project results will be widely disseminated, guided by the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Code of Ethics for Aboriginal and Torres Strait Islander Research (The AIATSIS Code) to ensure benefit sharing and a broad understanding of the impact and value of our research.

03 Terminology

- Indigenous peoples/ First peoples in what is now Australia identify as Aboriginal peoples (mainland) and Torres Strait Islander peoples (Torres Strait).
- The plural form “peoples” reflects the diversity of over 250 groups in “Australia” (AIATSIS 2020; Kwaymullina et al. 2013).
 - Individuals prefer identifying by their language group, homeland, or native island for Torres Strait Islands peoples (AIATSIS 2016). Thus, data engaged with in the project will be grounded in specifics to its community of origin.

The use of Australia in quotation marks or preceded by “what is now” stresses the settler-colonial foundation of the state and emphasises the unceded sovereignty of Aboriginal and Torres Strait Islands peoples over their lands.

04 Literative review

- Three main focal points of the project literature review are:
1. Land, Life, and Kinship - Indigenous knowledges inform the relationships between peoples and the Land or Country, seen as sentient and sapient (Kwaymullina 2008; Dudgeon and Bray 2023; Milroy et al. 2023).
 2. Relationality - Relationality is one of the common denominators that runs through diverse Aboriginal and Torres Strait Islands Knowledge systems (Dudgeon et al. 2023; Moreton-Robinson 2017).
 3. Stewardship, Care, and Reciprocity - Relational worldviews offer cultural and gender specific understandings of people’s kinship with Land, defining their stewardship responsibilities (Grieves 2009; Moreton-Robinson 2004, 2017; Dudgeon et al. 2023).

04.1 Country for knowledge, knowledge for Country: relational ways of knowing, being, doing, and valuing



Shoemaker impact structure. Photo by USGS on Unsplash

Indigenous knowledges are holistic, multidimensional, and fluid matrices of comprehension and interpretation.

- They are place-based, experiential, and mediated through embodied performances like stories, ceremonies, rituals, and cultural expressions (Grieves 2009; Dudgeon and Bray 2023).
- They encompass domains of law, ethics, wellbeing, philosophy, culture, spirituality, ecology, medicine, cosmology, among others (Grieves 2008; Parker & Milroy 2014; Dudgeon et al 2023).

04.2 Collecting institutions

- Western Galleries, Libraries, Archives and Museums (GLAMs) as collecting entities reflect the dispossession of Indigenous peoples and continuously undermine their sovereignty and self-determination. This is apparent in:
- Data violence recordkeeping, archival storage, and digital surrogates (McKemmish et al. 2019; Christen and Anderson 2019a; Booker 2021; Duarte and Liboiron 2024).
 - Cultural theft (records, cultural artefacts, and human remains) (MacNeil 2018; Smith 2021; Wallace 2021).
 - Curatorial and archival frameworks (Booker 2022; Thorpe et al. 2023).
 - IPR, copyright laws, and attribution methods (Anderson and Christen 2019a; Giaconia, Mahar, and Collins 2024).
 - Indigenous misrepresentation and misinterpretation of metadata (McKemmish et al. 2011; Anderson and Christen 2019b).

05 Methodologies overview

- Land-based and community-based research methodologies to develop Indigenous archival frameworks and stewardship models for Indigenous knowledges in GLAMs (physical and digital)
- Indigenous Interventions in AI value chains and AI ethics
- Local protocols and principles for Indigenous archival sovereignty and knowledge management
- Local and global guidelines for Indigenous self-determination and data sovereignty
- Guidelines for Indigenous-centred AI systems
- RSE SDLC informed by inclusive requirements elicitation, participatory design and co-production approaches

This body of work informs and guides the theoretical and methodological framework of iREAL within its emphasis on AI and Machine Learning for Indigenous Knowledge Management in GLAM spaces.



Person Foot Prints on Sands. Photo by Min An on Unsplash

06 AI ethics

- In projects such as these, addressing ethical concerns underpins both research and deployment/development approaches. Ethical concerns such as:
- AI decision making and biases
 - Extractive AI/ML practices that do not benefit Indigenous communities
 - Human-rights approaches
 - Environmental impact – data centres (power and water usage), mining on Indigenous lands and using Indigenous waterways

07 Protocols, guidelines, and principles

- iREAL is guided by the following sets of protocols, guidelines and principles.
1. Indigenous Knowledges in GLAMs
 - The UN Declaration of Rights of Indigenous People: Article 11, Article 12, and Article 31 (2007).
 - The ATSILIRN Protocols for Libraries, Archives and Information Services (2010).
 - Indigenous Archives Collective Position Statement on The Right of Reply to Indigenous Knowledges and Information Held in Archives (2021).
 2. Indigenous Data Sovereignty and Governance
 - Maiam nayri Wingara Indigenous Data Sovereignty and Data Governance (2018) .
 - CARE Principles for Indigenous Data Governance (Research Data Alliance 2019).
 3. Indigenous Protocols for Artificial Intelligence
 - Guidelines for Indigenous-centred AI Design (Lewis and Edward 2020).

08 Get involved

If you’re interested in learning more, would like to be notified when we publish our outputs, or would like to be included in the invite list for upcoming events, email ✉ Paul.Gooding@glasgow.ac.uk and/or ✉ Samantha.Callaghan@kcl.ac.uk.



This work was supported by the Arts & Humanities Research Council under the Bridging Responsible AI Divides Scheme [grant number AH/Z505638/1]

