

Indigenous in AI



Workshop for the 40th ICML

Saturday July 29, 2023

Hawai'i Convention Center, Honolulu, Hawai'i

09:15 Welcome Ceremony

Theme 1: Indigenous Data

09:30 *Charting collective courses: Hawaiian data futures & AI.* **Hina Puamohala & Kingi Gilbert**, Awaiaulu.

10:00 Sponsors & Coffee

10:20 *Protecting the future: Data sovereignty and the Kaitiakitanga License.* **Peter Lucas Jones & Suzanne Duncan**, Te Reo Irirangi o Te Hiku o Te Ika.

10:50 *Indigenous design thinking using Artificial Intelligence.* **Garry Oker**, Doig River First Nations.

Theme 2: Large Models, Small Communities

11:20 *Big Tech Imperialism and AI.* **Keoni Mahelona**, Te Reo Irirangi o Te Hiku o Te Ika.

11:50 Lunch

Theme 3: The State of the Art in Indigenous AI

13:20 *The Creation of a Bilingual Māori-New Zealand English ASR.* **Lee Stevens & Miles Thompson**, Te Reo Irirangi o Te Hiku o Te Ika.

13:50 *Automatic Speech Recognition and Natural Language Processing in Hawaiian.* **‘Ōiwi Parker Jones**, Oxford.

14:20 *Indigenous Equitable AI.* **Michael Running Wolf**.

14:50 Sponsors & Coffee

Theme 4: AI as a Tool to Empower Indigenous Communities

15:20 *Indigenous Design Methods influence on Human-Computer Interaction and AI Design.* **Kari Noe**, University of Hawai'i.

15:50 *Data Sovereignty & AI Ethics.* **Michelle Lee Brown & Caroline Running Wolf**.

16:20 Discussion - Levers of power for indigenous peoples to lead their own AI initiatives

17:00 Closing

17:45 - 20:00 Social - Invitation to come pā'ina! [Hula's](#) Waikīkī, 134 Kapahulu Ave.

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Speaker Bios

Theme 1: Large Models, Small Communities

Big Tech Imperialism and AI

Keoni Mahelona

Keoni (kanaka Maoli) is the CTO at Te Hiku Media and a leading practitioner of indigenous data sovereignty. Originally from Anahola on the island of Kauaʻi, Hawaiʻi, Keoni has been living and working in Te Hiku o Te Ika for over 10 years having first arrived in Aotearoa as a Fulbright Scholar. As a driving force behind the development of digital innovation projects that seek to secure the future of te reo Māori and other indigenous languages, Keoni makes decisions every day to protect the sovereignty of Māori data and technologies.



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Theme 2: Indigenous Data

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Charting collective courses: Hawaiian data futures & AI



Hina Puamohala Kneubuhl

Hina is a language advocate, translator, researcher, writer, storyteller, and kapa maker who holds undergraduate degrees in Hawaiian language and botany, as well as a master's degree in Hawaiian language from the University of Hawai'i at Mānoa. She is one of three founders of the Hawaiian fashion company Kealopiko, where she specializes in the research, writing, and storytelling behind the company's designs. She is also a translator with Awaiaulu, with a focus on rendering 19th century Hawaiian language writings into English. Her work in re-indexing the Bishop Museum's Hawaiian language oral history collection and her use of the Ka Leo Hawai'i archive in her master's project are the fire in her passion for spoken language and its importance in the revitalization and normalization of 'ōlelo Hawai'i.

Kingi Gilbert

Kingi (Ngāti Whakaue, Ngāti Maniapoto, Ngāti Rarua, Ngāti Tama) has been living between Aotearoa and Hawaii since 2007 as a software developer, technical producer and digital marketing consultant. Kingi looks after digital publishing at Awaiaulu and works independently under Ignite Studios with clients across the Pacific. In 2003 Kingi worked with the World Intellectual Property Office and the Ministry of Economic Development New Zealand to develop databases and systems to protect traditional knowledge and cultural heritage. Speaking at many conferences, universities and appearing in media at the time, Kingi's advocacy work elevated the public discussion on Māori intellectual property and illustrated how government policies fall short of partnership, instead marginalizing Māori, allowing others to control key aspects of Māori culture and amplify inequities. Kingi brokered private agreements between Iwi kaitiaki (tribal guardians) and businesses around the use of particular haka - how it was digitally captured, processed, integrated into other systems (including sub-processors) and used in marketing.

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Indigenous design thinking using Artificial Intelligence

Garry Oker

Garry Oker MA, Beaver/ Dene song keeper, artist / painter, cross- cultural facilitator and designer. In November 2017, Garry was elected Councillor and now serving 3rd term with a portfolio of cultural heritage reconciliation in governance and policy. Garry drums and sings ceremonial songs at public venues and is leading a cultural heritage design specialist through large scale public-art exhibits and production. He has presented Nationally and internationally for 20 years. Most recent was at the National heritage trust conference in Toronto, Canada November 2022.

Over the last past 5 years he has worked with Chief and Council and staff at Doig River First Nation to complete the Treaty Land Claim settlement (TLE) and the designing and building an urban reserve (Nachine Commons) in Fort st John, BC. Garry promotes DRFN Business interest through multiple cross-cultural training workshops to industry and government and provides leadership for the infrastructure development at T'se K'wa (Charlie Lake cave) a 12,500 year old National Heritage Site. Garry also serves as creative director for the BC Hydro Site C Dam project involving 13 communities.

Garry continues to learn and apply innovative design ideas in implementing UNN declaration and is a graduate from St. Lawrence College in Fashion Design and visual arts and has a Master of Arts Degree in Leadership and Training from Royal Roads University.



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Protecting the future: Data sovereignty and the Kaitiakitanga License



Suzanne Duncan

Suzanne (Te Rarawa, Te Aupōuri, Ngāi Takoto) is the Chief Operating Officer of Te Hiku Media and supports a number of priorities across the organisation. Leading the curation and labeling of te reo Māori data is one of those focus areas. Recently appointed Chairman of the Te Rarawa construction company, Suzanne also has seasoned experience in tribal business development and understanding the needs of whānau. Her awareness and participation in native speaker corpus transcription and pronunciation corpus gathering supports the affirmative action focus of capability development for Māori in digital entrepreneurship.

Peter-Lucas Jones

Peter-Lucas (Te Aupōuri, Ngāi Takoto, Te Rarawa, Ngāti Kahu) was born in Kaitia and raised at Mahimaru Marae. He is the Chief Executive Officer of Te Reo Irirangi o Te Hiku o Te Ika (Te Hiku Media), Chairman of Te Whakaruruhau o Ngā Reo Irirangi Māori (The Māori Radio Network) and Chairman of Te Rūnanga Nui o Te Aupōuri (The Post Treaty Settlement Trust of the Te Aupōuri Tribe). He is an experienced governor in the Māori media and tribal business sectors, and a trusted kaitiaki of Māori data. Peter-Lucas negotiates the responsibility of protecting data while meeting the needs and expectations of iwi and hapū in the area of Māori language revitalisation, Māori broadcasting and Māori natural language processing. As a practitioner he makes decisions every day to advance Māori data sovereignty solutions. This experience has supported intergenerational corpus gathering efforts and the development of a Kaitiakitanga Data License for Te Hiku Media.

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Theme 3: The State of the Art in Indigenous AI

The Creation of a Bilingual Māori-New Zealand English ASR



Lee Steven

Geoscientist turned data scientist - Lee spent over a decade in Geotech using multi disciplinary geoscience data to build 2D and 3D models of the earth. Born in Fiji, and raised in Aotearoa, his career in geoscience has taken him to Perth to Ulaanbaatar, Botswana, Myanmar, the UK and many places in between. After making the transition into machine learning , he's now back living in Te Whanganui a Tara, working as a Data Scientist at Te Hiku Media, with a focus on developing bilingual speech tools for Māori and New Zealand English.

Miles Thompson

Miles is a machine learning engineer working on AI research and model deployment for Te Hiku media. He has experience in financial risk models, distributed systems, and tech in general. He is also an open source contributor with an interest in mutual aid, mutual credit and disaster preparedness and helped build and organize volunteer response during the early COVID crisis.

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Automatic Speech Recognition and Natural Language Processing in Hawaiian

‘Ōiwi Parker Jones

‘Ōiwi Parker Jones heads the Parker Jones Neural Processing Lab (PNPL) in the University of Oxford's Department of Engineering Science; he is also the Hugh Price Fellow in Computer Science at Jesus College, Oxford, an honorary fellow in the Nuffield Department of Clinical Neurosciences, and a Principal Investigator at the Oxford Robotics Institute (ORI). A member of the first class at Pūnana Leo o Hilo, Ke Kula Kaiapuni o Keaukaha, and Nāwahīokalani‘ōpu‘u, ‘Ōiwi grew up speaking Hawaiian in Hawai‘i when the language was still banned. In his doctoral research, completed at the University of Oxford, ‘Ōiwi focused on low-resource NLP for Hawaiian. Over the years the scope of ‘Ōiwi’s research has broadened (e.g. to include foundational work on brain-computer interfaces). Nonetheless he strives to drive progress in Hawaiian NLP and ASR, to improve conditions in Hawai‘i for future generations. This includes developing low-resource, data-efficient deep learning methods, as well as leading a data drive for speech recognition within the community.



Michael Running Wolf

Michael Running Wolf (Northern Cheyenne/Lakota/Blackfeet) was raised in a rural prairie village in Montana with intermittent water and electricity; naturally he has a Master’s of Science in Computer Science, is a former engineer for Amazon’s Alexa, former faculty at Northeastern University, and is pursuing a PhD in CS at McGill University. Michael is researching Indigenous language and culture reclamation using immersive technologies (AR/VR) and artificial intelligence. His work has been awarded a MIT Solve Fellowship, the Alfred P. Sloan Fellowship, and the Patrick McGovern AI for Humanity Prize. Through the ethical application of AI and advanced technology respecting Indigenous ways of knowing he is contributing to the ecology of thought represented by the Indigenous.



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Theme 4: AI as a Tool to Empower Indigenous Communities

Indigenous Design Methods influence on Human-Computer Interaction and AI Design

Kari Noe

Kari Noe is a PhD student of Computer Science at the University of Hawai'i at Mānoa. Noe is the co-lead of Create(x) at the Academy for Creative Media at UH West O'ahu. Create(x) is an immersive surround-screen living laboratory for students to showcase their works at the intersection of creative media, computation, culture, art and science. Noe is also a staff member at the Office of Indigenous Innovation co-managing the project portfolios for EPSCoR's Change Hawai'i's seed projects.



Noe's expertise is in designing for education and training software that utilize extended reality (XR) technologies and equitable technological design practice with a focus on Indigenous communities (specifically the Kanaka Maoli community). She has worked on Kilo Hōkū, a virtual reality simulation intended to train beginner-level navigation students in the basic celestial concepts for modern Hawaiian wayfinding. Kilo Hōkū is currently being used in high school level modern Hawaiian wayfinding programs. Wao Ki'i is an augmented reality environment housed in Create(x). Through Wao Ki'i, Noe developed an equitable design framework for XR cultural heritage exhibition projects as well as researched ways to build familiarity with basic Hawaiian grammar and vocabulary without the use of an intermediary language (English).

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Caroline Running Wolf

Caroline Running Wolf is a citizen of the Apsáalooke (Crow) Nation who was raised and educated in the USA, Germany, and Canada. Caroline is a language activist and XR producer dedicated to supporting Indigenous languages and Indigenous data sovereignty. Towards that goal Caroline co-founded IndigiGenius, and the First Languages AI Reality (FLAIR) initiative and also serves on multiple advisory boards where she champions the inclusion of Indigenous knowledges. As co-author of the Indigenous Protocol and Artificial Intelligence Position Paper and in speaking engagements, Caroline is an advocate for Indigenous data sovereignty, data justice, and AI ethics.

Caroline's PhD research at University of British Columbia in Vancouver, Canada partners with Kwakwaka'wakw communities and explores potential applications of immersive technologies (AR/VR/XR) and artificial intelligence (AI) to effectively enhance Indigenous language and culture reclamation.

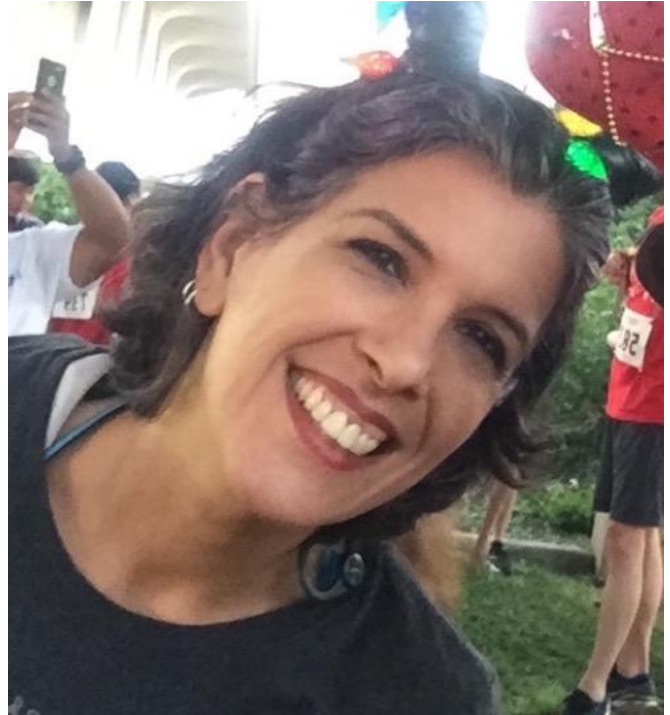


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Michelle Lee Brown

Michelle Lee Brown is the Assistant Professor of Indigenous Knowledge, Data Sovereignty, and Decolonization at Washington State University, in the Digital Technology and Culture Program. She is a recent Eastman Fellow at Dartmouth College in their department of Native American and Indigenous Studies, and recently completed her PhD in the Indigenous Politics and Futures Studies programs in the Political Science Department at the University of Hawai'i at Mānoa. Her work articulates Indigenous political praxis and futures through digital SF; she is currently working on VR projects for community healing; installations and writing about crows, eels, keyboards, and relationality, and a comic based on multiple levels of impostor syndrome. More about her practices and praxis can be found at www.michelleleebrown.com



A pansensual Euskalduna from Lapurdi (Biarritz/Miarritze Côte des Basques), she grew up on Wampanoag territories around Buzzards Bay and now lives on Umatilla, Colville, and Yakama lands and waters. She strives to uphold her relational commitments to these communities and is grateful to be working with Indigenous in AI and Queer in AI to imagine and build otherwise.