

Dan Richardson

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Doctoral researcher and software engineer with a passion for mobile technologies and Digital Civics research. I design and develop mobile applications and full-stack web technologies, and conduct Human-Computer Interaction research using participatory design in public-facing roles.

SKILLS SUMMARY

Human-Computer Interaction (HCI) Research

- Strong understanding of organising and leading engagements with research participants and co-designers: from one-off workshops and deployments with international institutions, to multi-year relationships with grass-roots community groups.
- Strong track record of participatory technology and service design and software development. Experience in handling sensitive data, including that of healthcare patients and children.
- Experience of qualitative data capture and analysis with a wide range of stakeholders.
- Strong track record of publishing and presenting research: lead author on three full-length papers at leading HCI venues, and co-author on multiple other papers (see *Publications*).
- Experience as both a sole/lead researcher and working within small research teams.

Software Development and Publishing

- Programming experience in multiple languages, frameworks, software and tools, including C# (Xamarin Android & iOS, Xamarin Forms, ASP.Net, Unity3D), HTML, CSS, Python, C++, JavaScript, Java, Git Source Control, Visual Studio, XCode and Microsoft Azure.
- Published multiple open-source mobile research applications, including OurPlace, MySkinSelfie and TalkFutures on both Google Play and the iOS App Store.

General

- Experience tutoring undergraduate units, and teaching in school classrooms.
- Experience of content production in many software suites, including Microsoft Office, Adobe Creative Cloud (Photoshop, Illustrator, Premiere Pro, Lightroom) and L^AT_EX.

EDUCATION

PhD in Digital Civics

Open Lab - Newcastle University, 2016 - Present

Over the course of my PhD I developed the **OurPlace** platform, which supports the creation, sharing and completion of highly customizable mobile learning activities. These activities are built by combining together bite-size modular tasks, which can each ask the user to perform a particular action (e.g. 'Take a Photo', 'Record Audio'). OurPlace was developed using a participatory and iterative design process with multiple stakeholders, including local community experts and enthusiasts, school teachers and students. Over the course of the project we ran small design workshops with park rangers and teachers, mixes of short and longitudinal studies with local schools and ethnographic studies with local heritage groups. The app has been used by dozens of community groups and hundreds of students across nine different schools, in contexts ranging from local parks to lighthouses. I presented the some of this research at MobileHCI 2018 (Richardson et al., 2018), and the latest work will be published at CHI 2020 (Richardson & Kharrufa, 2020).

MRes in Digital Civics

Open Lab - Newcastle University, 2015 - 2016

My MRes in Digital Civics provided me with a foundational understanding of the field of HCI. The course included an overview of HCI and interaction design research and methods, a conceptual and practical understanding of qualitative and quantitative research methods, attendance of ACM CHI, as well as team projects which resulted in the creation of prototype artefacts. My end-of-year individual project, **ParkLearn**,

investigated the potential role for mobile learning technologies for content creation and delivery in austerity-stricken local parks. This involved several months of engagements with stakeholders (park rangers and volunteers, school teachers and students) through field studies and workshops, resulting in the development of a mobile app technology probe (using Xamarin for Android), which was then deployed with a summer school. I published this research at C&T (Richardson et al., 2017).

Computer Science Games Engineering MComp

Newcastle University, 2010 - 2014

This four-year programme, which combined a bachelors and masters-level degree, introduced me to a wide variety of programming skills and development practices. Spanning from database design to physics simulation, the course involved solo projects (such as website development) and working within teams (such as producing a cross-platform online multiplayer game in a team of 8 developers). My larger personal projects were HCI related: one project attempted to motivate stair usage over elevators through gamified data tracking and team goals (using a Laravel-backed website, with QR/NFC scan points), and another utilised real-world NHS data to simulate aging populations, highlighting the issue through a procedural narrative (using Unity3D).

EXPERIENCE

Visiting Researcher & Developer International Federation of the Red Cross Red Crescent - Geneva, 2018

I spent several months in Geneva, working at the IFRC's Geneva headquarters as part of the Innovation Team. During this time I assisted with conducting research for *Strategy 2030*, a project within the IFRC which aimed to understand the issues and challenges which the Federation will face in the near future. Our goal within Strategy 2030 was to collect ideas of how the IFRC needed to change in order to best prepare for these challenges. We developed **TalkFutures**, a Xamarin Android and iOS app which made it easy for participants to contribute semi-structured, qualitative audio data. TalkFutures was used to collect ideas from people from across the globe, with IFRC members from 86 different National Societies contributing recordings.

Visiting Researcher

International Computer Science Institute - Berkeley, 2017

During my time at ICSI as a visiting researcher I assisted with the **Mooqita** project, which aimed to give users of massive online learning courses (MOOCs) opportunities to solve real-world challenges created by potential employers. During this period I worked within a small team to ideate, design and develop a prototype student onboarding experience for Mooqita. We also planned and tested a series of participant research workshops and think-aloud walkthroughs, designed to evaluate the prototype and explore how it could be improved.

Research Associate

Culture Lab - Newcastle University, 2014 - 2015

Working as a research associate gave me opportunities to contribute to several research projects:

- **MySkinSelfie:** I designed and implemented a mobile application to support patients' self-monitoring of skin conditions, with the goal of reducing the burden of unnecessary patient referrals. The application assisted patients in taking consistent photographs of their skin conditions through an 'onion skin' interface. I developed both the mobile application (using Xamarin Forms) and the server-side system (ASP.Net). The application was deployed within several NHS practices within the North of England, with it being recommended to patients living with applicable skin conditions. As well as ongoing studies within the NHS, several evaluations have been undertaken and published (Hampton et al., 2017, 2019). These evaluations showed that patients not only found MySkinSelfie easy to use, but also useful for tracking the progress of their skin conditions over time. I was also invited to discuss the project on BBC Radio Newcastle.
- **Speeching:** Working within a small team, I developed and helped design a mobile application designed to assist in speech and language therapy (SLT) to people living with Parkinson's. The application gave participants several different SLT exercises and recorded their speech. These recordings were then given to online crowd workers, who attempted to correctly identify the words in the recordings and gave feedback to how clear they found different aspects of the recording. The participants could then use this feedback to gain a better understanding of which elements of their speech others struggled to understand, and update their therapy sessions accordingly. This research was published at CHI 2016 (McNaney et al., 2016).

- **VoiceBoard:** I designed and implemented the Python client and server-side logic for a Raspberry Pi-powered peer support platform for people experiencing homelessness. Participants living in shelters were given a technology probe, which allowed participants to send voice communications to each other anonymously. The physical device was designed to fit unobtrusively into a the shelters' bedrooms, appearing to be little more than a cork noticeboard with some buttons, which could be used to select options in a narrated menu.

Gameplay Programmer

Lemon Moose Games, 2014

I worked in a small game studio, working in Unity3D to produce my own grid-based 3D puzzle game, design levels for a published Solitaire game and contribute significantly to a dynamic collage mobile app. I also became one of the main programmers on a fantasy football application, producing the majority of the server-side gameplay and user account logic using GameSparks and MongoDB.

Web Development Intern

CANDDi, 2013

I completed a summer internship at CANDDi, a startup web tech company. As part of a team utilising the agile process Scrum, I strove to hit targets in weekly sprints and used collaborative Git repositories. I was tasked with converting their customer-facing corporate site from PyroCMS to another technology, Jekyll. Upon the project's completion, I presented it at a local development community event.

PUBLICATIONS

First Author

- **Dan Richardson**, and Ahmed Kharrufa. "We are the Greatest Showmen: Configuring a Framework for Project-Based Mobile Learning" In Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI). ACM. 2020. (Conditionally Accepted)
- **Dan Richardson**, Pradthana Jarusriboonchai, Kyle Montague, and Ahmed Kharrufa. "Parklearn: Creating, Sharing and Engaging with Place-Based Activities for Seamless Mobile Learning." In Proceedings of the 20th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI), p. 25. ACM, 2018.
- **Dan Richardson**, Clara Crivellaro, Ahmed Kharrufa, Kyle Montague, and Patrick Olivier. "Exploring Public Places As Infrastructures for Civic M-Learning." In Proceedings of the 8th International Conference on Communities and Technologies (C&T). ACM Press, New York, 2017.

Contributing Author

- Philip Hampton, **Dan Richardson**, Sarah Brown, Charlotte Goodhead, Kyle Montague, and Patrick Olivier. "Usability testing of MySkinSelfie: a mobile phone application for skin self-monitoring." Clinical and experimental dermatology (2019).
- Róisín McNaney, Christopher Bull, Lynne Mackie, Floriane Dahman, Helen Stringer, **Dan Richardson**, and Daniel Welsh. "StammerApp: Designing a Mobile Application to Support Self-Reflection and Goal Setting for People Who Stammer." In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), p. 267. ACM, 2018.
- Philip Hampton, **Dan Richardson**, Kyle Montague, Patrick Olivier "Evaluation of Non-pharmaceutical Skin Care Products in the Daily Prevention, Treatment, and Palliative Care of Skin Toxicity during Chemotherapy." Journal of the American Academy of Dermatology 76, no. 6 (June 2017): AB129. 2017.
- Róisín McNaney, Mohammad Othman, **Dan Richardson**, Paul Dunphy, Telmo Amaral, Nick Miller, Helen Stringer, Patrick Olivier, and John Vines. "Speeching: mobile crowdsourced speech assessment to support self-monitoring and management for people with Parkinson's." In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI), pp. 4464-4476. ACM, 2016.

REFEREES

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