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# Autism and Technology Beyond Assistance & Intervention

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**Abstract**

Technologies designed for people with autism are often focused on their particular functional limitations. We argue that this ignores a rich design space in which technologies could play more meaningful and multi-faceted roles in the complex life-worlds of people with autism. This one-day workshop will explore how to go beyond technologies that narrowly focus on concepts of assistance or intervention. We specifically ask a) how autism is conceptualised as a disability and how this impacts on possible roles of technologies, b) how to unlock novel design spaces methodologically and c) how to evaluate the experiences of people with autism with technology. As an outcome, we will collaboratively develop a manifesto to draw attention to the gap we have identified and develop a research agenda to address it.

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## Background

Technologies designed for autistic people<sup>1</sup> typically fall into one of two categories. In the first category is Assistive Technology (AT), with its intention to support autistic people with difficulties they encounter in their lives. In the second category are technologies which are seen as a delivery channel for learning interventions, with the promise of engaging otherwise hard to reach groups in novel ways [7]. Prominent examples in the first category include The Transporters, an emotion recognition intervention [3], and, in the latter, vSked - an interactive, collaborative scheduling system [4].

We argue that these categories are narrow and reductionist conceptions of the possible roles that technology might play in the lives of autistic people (cf., [2]). Both types of technology are fundamentally driven by a deficit model of disability, and focus on the mitigation of a functional limitation. However, such a model ignores the rich and complex life-worlds of people with autism as an opportunity space for design. Mankoff et al were among the first to highlight the problematic preoccupation of technologists with “fixing the problem” [6]. Both the medical model<sup>2</sup> and the social model<sup>3</sup> of disabilities have proven pragmatically useful in generating requirements for technology, but have failed to holistically capture or describe the complexities of the disabled experience. As both Mankoff et al and Frauenberger emphasise, efforts to address practical everyday challenges

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<sup>1</sup>This paper uses both, person-first and label-first language to reflect that many self-advocacy groups have recently expressed that the traditional person-first language does not reflect their sense of self even though many professionals in the field still prefer it [5, 9].

<sup>2</sup>The medical model is grounded in biological determinism and conceptualises disability as a divergence from normal function.

<sup>3</sup>The social model introduced the distinction between impairment and disability, with the latter being located in the ways, and the extent, to which society integrates people with impairments

for people with disabilities through technology are laudable and important, however, we argue that they only respond to one aspect of the life worlds of this user group.

Recent developments in the field of Disability Studies have sought to find new theoretical foundations to address reductionism. Shakespeare, for example, proposes a relational model of disability that is based on the philosophy of critical realism [8]. Central to this model is the belief that the disabled experience is made up of the complex interplay between factors which are both intrinsic (e.g., the nature of the impairment, a person’s own attitude towards it or their personality) and extrinsic (e.g., attitudes of others, the environment, support systems or social or economic issues). Such a holistic and multi-facetted conception of disability has fundamental consequences for driving the exploration of meaningful roles of technology in the lives of people with disabilities [1]. It highlights the need for a critical reflection on the intentions and goals with which technologies are designed in this context, requires designers and researchers to think about novel processes to explore the complex and under-specified problem space, and necessitates a critical discussion about possible ways of evaluating the experiences that disabled people have with technologies.

This workshop aims to open this specific debate in the context of technology and autism. Thus, the questions driving this workshop are: What does it take for us to be able to go beyond assistive or intervention technologies? What are the theoretical, philosophical, ethical and moral foundations that would allow us to do so? What impacts would this have on the methodologies by which we create and evaluate technology? What are the epistemic implications for doing science in this field? What are the practical implications for autistic people and their broader support environment? Are there

possible lessons for the design of technology more generally?

Specific outcomes from this workshop will consist of a draft of a collaborative manifesto that summarises the perspectives developed and proposes a concrete, novel research agenda for autism and technology. We also plan to organise a special issue of a journal which would be framed by the manifesto.

### Organizers

**Christopher Frauenberger** is Senior Researcher at Vienna University of Technology and Principle Investigator of "OutsideTheBox- Rethinking Assistive Technologies with Children with Autism"<sup>4</sup>. He holds a PhD in Computer Science from Queen Mary, University of London and subsequently worked as Postdoctoral Fellow at Sussex University. In his academic research he focused on exploring interactive technologies in the contexts of people with disabilities. This included designing auditory displays for the visually impaired, investigating non-verbal communication in people with schizophrenia and technologically enhanced learning environments for children with autism. Methodologically he is committed to participatory design approaches and often interprets collaborative techniques from other fields in his work.

**Judith Good** is a Reader in the Department of Informatics, University of Sussex. She is also Director of the Human Centred Technology Lab. Prior to this, she was an assistant professor in the Organizational Learning and Instructional Technology (OLIT) program at the University of New Mexico and, before that, a research fellow at the University of Edinburgh, where she received her PhD in Artificial Intelligence. Her research focuses on uses of technology that motivate

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<sup>4</sup><http://outsidethebox.at>

people to engage with learning in meaningful ways. More specifically, she focuses on the use of immersive virtual environments for learning, educational simulations, constructivist and constructionist learning environments. She has a particular interest in using and developing participatory methods in order to design digital technologies for and with children with Autism Spectrum Conditions (ASC).

**Narcís Parés** is a Tenure Associate Professor in the ICT Department of Universitat Pompeu Fabra (Barcelona, Spain). He holds a PhD in Audiovisual Communication – specialized in Virtual Reality – (UPF), and MSc and BSc in Computer Science. He is currently PI of the project "IN-AUTISTIC: Social Integration of Children with Autism through ICT" funded by RecerCaixa. He is co-creator and coordinator of the Master in Cognitive Systems and Interactive Media (UPF). His research interest is focused on the possibilities of Full-Body Interaction based on current Embodied Cognition theories, in areas such as Learning, Play and Special Needs. This research is undertaken from the standpoint of Interaction Design, Interactive Communication and Interactive Playgrounds. It is mainly focused on interaction for children and using non-invasive technologies. He is member of the Steering Committee of the ACM SIGCHI & IFIP International Conference on Interaction Design and Children, member of the IFIP TC13 - Human-Computer Interaction, WG 13.9 – Interaction Design and Children and member of the Editorial Board of the International Journal of Child-Computer Interaction, Elsevier.

### Website

A website will be developed for the workshop, and will be accessible at this URL:

<http://igw.tuwien.ac.at/chi16-autismtechnology>

The website will be used to advertise the workshop, and

also serve as a repository for ongoing work, both before and after the workshop. It will include the following topics:

- Introduction & Overview
- Call for Papers
- Programme of the Day
- Resources (related literature)
- Position papers (all papers submitted by participants)
- Manifesto & Future Research Agenda

### Pre-workshop plans

All three organisers have extensive experience in the field and consequently have a large network of collaborators and academic peers. We intend to advertise the workshop through the usual mailing-lists (e.g., CHI-Announcements, BHCI, EUSSET etc), but also target more specific channels, such as the monthly digest of the Special Interest Group on Autism and Technology at IMFAR (International Society for Autism Research) and the ASD Tech mailing list.

We will also make use of our extensive academic network to publicise the workshop and reach out to colleagues in the field more directly, including publicising the workshop via the ESRC (UK Economic and Social Research Council) seminar series which, Good co-organises, entitled, 'Innovative technologies for autism – critical reflections on digital bubbles'.

### Workshop structure

We propose a full day workshop with the following overall structure:

9:00	Welcome
9:30	Introductions & Background
10:00	Focus Session: Autism as Disability, Concepts and Consequences
11:00	<b>Coffee Break</b>
11:15	Focus Session: Unlocking Design Spaces
12:15	Quick Synopsis & Documentation in the plenum
12:30	<b>Lunch Break</b>
13:30	Focus Session: Measures of Success
14:30	<b>Coffee Break</b>
15:00	Synopsis and Discussion
16:00	Fresh Air Break
16:15	Manifesto, Future Agenda for Autism & Technology, Plans for Dissemination
17:00	<b>Workshop end</b>

All three Focus Sessions will follow the same structure: after 5 to 10 minutes of introduction, participants will break out into small groups of 3 to 5 people. They will receive a series of guide questions and be asked to discuss the topics and document their outcomes on flip charts. Before the break, each group will have 3 minutes to present their findings. At the Quick Synopsis session before lunch, a first round of reflections will provide an overview of the major themes, challenges and leads that have been produced thus far.

The Synopsis and Discussion block will provide the opportunity to develop emerging themes in more depth and work towards a collaborative manifesto. The final session of the day will be devoted to sketching out the manifesto and a future research agenda on Autism and Technology. We will

close by discussing possible avenues for dissemination, and we intend to organise a social gathering and communal dinner at the end of the workshop.

### Post-workshop plans

While the cornerstones of the manifesto will be drafted during the workshop, we plan to set up a mailing-list of participants that we will use to collaboratively develop the manifesto into a publishable state. We will then use the manifesto as a starting point for organising a special issue in a well respected journal in the field (possible targets include: International Journal of Human-Computer Studies or Interacting with Computers). We will also try and publish the manifesto in venues with greater reach into industry and the general public, e.g., the SIGCHI Interactions Magazine.

### Call for Participation

Technologies designed for people with autism are often focused on their particular functional limitations. We argue that this ignores a rich design space in which technologies could play more meaningful and multi-faceted roles in the complex life-worlds of people with autism. This one-day workshop will explore how to go beyond technologies that narrowly focus on concepts of assistance or intervention. During the day, we will have focus sessions to discuss a) how autism is conceptualised as a disability and how this impacts on possible roles of technologies, b) how to unlock novel design spaces methodologically and c) how to evaluate the experiences of people with autism with technology. As an outcome, we will collaboratively develop a manifesto to draw attention to the gap we have identified and develop a research agenda to address it.

We invite position papers (up to four pages, SIGCHI Extended Abstract Format) which engage with the workshop

topic by considering the points described in the above paragraph, or bring in other relevant perspectives, including:

- Theoretical, philosophical and ethical foundations of developing technology for autistic people
- Design and evaluation methods
- Case studies of technologies that have multi-faceted roles

Position papers should be submitted by 12 February, 2016 (12pm PDT) via email to [christopher.frauenberger@tuwien.ac.at](mailto:christopher.frauenberger@tuwien.ac.at). The selection process will ensure that high quality contributions from a range of different perspectives are invited to participate.

Additional resources, related literature and further practical information is available at the workshop's webpage: <http://igw.tuwien.ac.at/chi16-autismtechnology>

At least one author of an accepted submission is required to attend the workshop, and participants must register for both the workshop and at least one day of the main conference.

### Acknowledgements

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