

## INTERACT 2021 Workshop

### **Wearables, Humans, and Things – Addressing Problems in Education**

Wearable computer devices as well as the Internet of Things have changed Human-Computer Interaction quite considerably. In two previous workshops on Wearables, Humans, and Things (WHAT<sup>1</sup>) at INTERACT conferences, we have dealt with the impact of WHATs on HCI in general, application of WHATs and the visualization of information retrieved from networks of WHATs.

Triggered by the current COVID-19 pandemic, in 2020 many educational institutions from primary schools to universities quickly had to switch their teaching and learning processes from presence teaching to online learning. Many schools and universities were not well prepared while others managed pretty well to switch to the new distance-learning paradigm. In parallel to the institutions setting up eLearning systems, students had to care for their own equipment to participate in the eLearning courses. These courses typically still resemble traditional teaching with one person explaining the subject's topics and the students consuming the content. This type of eLearning does not make use of the new capabilities computers provide for training students.

In this workshop we discuss new ideas how we can use wearable or even implantable devices in an educational context. Such devices connected to the internet provide new means for conveying educational content using e.g. simulated data displayed on the devices or providing educational tasks to students fitting to their current environment.

Together with researchers from educational sciences, cognitive psychology and human-computer interaction, we discuss new educational scenarios made possible by introducing WHATs into education systems. We aim at developing new educational paradigms making use of these devices, supporting efficient distance learning and thus providing education to students who otherwise would not have the chance to participate in such educational opportunities.

The workshop at first aims at getting an overview of already existing applications of WHATs in an educational context. We want to discuss with the developers how such applications enhance the students' learning progress. Based on this overview, this workshop is intended to act as a platform for further discussions about

1. new ideas for employing WHATs in an educational context. We want to extend existing ideas and applications of WHATs. On the one hand, we aim at transferring applications of WHATs from completely other domains (like e.g. arts) to educational scenarios. On the other hand, we aim at generating ideas for completely new appli-

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<sup>1</sup> The terms WHAT or WHAT! (Wearables, Humans, And Things) were coined by Nahum Gershon and Steve Mann [e.g., see "Wearables, Humans, And Things: The Veillance Games People Play", IEEE-GEM 2015, or "Wearables, Humans, and Things as a Single Ecosystem!", IEEE Internet of Things 2015]

cations of WHATs to be used in an educational context. Especially in the combination of sensors integrated into the Internet of Things and wearable or implantable devices, we see the possibility for a large benefit in developing completely new eLearning paradigms.

2. new educational paradigms that arise from the use of WHATs in education. Current educational paradigms in eLearning are mostly the same as in conventional teaching settings. However, by employing WHATs, the level of interactivity in learning can be vastly increased. Students can interact with teachers and fellow students using the wearable or implantable devices while they in parallel can use sensors integrated into the devices and share the data with fellow students and teachers. Moreover, employing these networked sensors, learning settings can directly be adapted to a student's environment, enabling the use of realistic examples to illustrate the teaching material.

Building upon the points described above, this workshop aims at facilitating discussions among scholars, practitioners, and students to develop these needed new applications and educational paradigms. We want to encourage the participants to think together about how to realize such new interaction, engagement, and relationship between teachers, learners and technology to enable easier distance learning and bring education to a larger number of people. We encourage researchers and practitioners to share their ideas and experience in interaction, engagement, and interface mechanisms used in (distance) education with the community. Researchers and practitioners both from the areas of the Internet of things (IoT), wearables, implantables, skinnables, and embedded computing and from educational science are in particular encouraged to participate.

Some of the issues to be discussed by the participants are:

- What kinds of WHATs in general are suitable in educational settings?
- What kind of information should be presented to a student using WHATs?
- Which mechanisms for representing information to students using WHATs are feasible and appropriate in educational settings?
- How can WHATs enhance collaboration among teachers and students as well as among students?
- How can WHATs support education-relevant experience to disabled students?
- Which already existing applications of WHATs can be transferred to an educational context?
- How can sensors integrated in wearable devices be used to generate realistic examples that illustrate teaching material well?
- How can IoT devices be integrated into educational settings?
- Which kinds of sensor data should a student share with his fellow students?
- How can WHATs increase a student's situation awareness?
- Which new learning paradigms can be defined employing WHATs?
- How can WHATs foster collaborative learning among students both in a remote and in a classroom setting?
- How do interaction paradigms with WHATs differ in remote and classroom settings?
- Which different kinds of user groups should have access to and interact with data generated from WHATs in an educational setting?

- How is the privacy of data ensured when a user takes part in an educational scenario employing WHATs?
- What new interaction mechanisms are necessary to use wearable and implantable devices to interact among the participants in an educational setting?
- What is the role of system thinking and practice in dealing and managing WHATs in educational settings?

The workshop aims at scholars and students from the domains of:

- Interaction Design
- Cognitive Science / Cognitive Psychology
- Visualization and Multimedia
- Education Science
- Artificial Intelligence and Robotics
- Developers and practitioners of wearables, implantables, skinnables and the Internet of Things
- Common sense practitioners

We invite interested researchers to submit extended abstracts of position papers dealing with the topics described above to the workshop organizers. The extended abstracts should have a length of up to 2 pages and must be submitted as MS Word document in Springer LNCS format

(see <http://preview.springer.com/gp/computer-science/lncs/conference-proceedings-guidelines>).

Please send your submissions by email to [what21@hciv.de](mailto:what21@hciv.de)

Accepted position papers will be presented and discussed in the workshop at INTERACT 2021 in Bari, Italy (or in online sessions, depending on the development of the COVID-19 pandemics). Workshop position papers (of length up to 8 pages) will be published in adjunct proceedings of INTERACT 2021.

In addition we encourage a discussion already on the Facebook page: Wearables, Humans And Things - WHAT (<https://www.facebook.com/WHAT2016/>)

After the Workshop, we will continue the discussions in the Facebook page and will encourage the participants to send extended and revised position papers to the organizers for publishing e.g. in a Springer LNCS book or in a special issue of a suitable journal/magazine.

#### **Important dates:**

Submission Deadline (extended abstracts):	May 16, 2021
Notification of Acceptance:	June 7, 2021
Camera-ready Submission:	June 21, 2021
Workshop at INTERACT 2021	August 30, 2021

The workshop organizers

Gerrit van der Veer, Achim Ebert, Nahum Gershon, Peter Dannenmann