Augmented Tabletop Embodiments

By Andre Doucette, Regan Mandryk, Carl Gutwin

Humans developed rules of personal space over years of physically interacting around other people's bodies. While working at a table, these social rules guide people's behaviour: we avoid reaching over another person's physical arm. This aversion is useful for group work (e.g., by causing groups to take turns reaching into a workspace).

Our research investigates how people behave when *digitally* embodied: when they interact with others using a mouse and a digital arm instead of their physical arms. We've found there is no aversion to touching digital arms, even when the digital arms are pictures of our physical arms. This is a problem, because people can no longer depend on the social rules of personal space to guide others' behaviours, creating uncertainty and confusion.

Why do people behave differently digitally? People told us: "[The picture arm] is not me; that's not them. These embodiments, they just don't *feel*". We created four augmented arm embodiments to bring back some of the
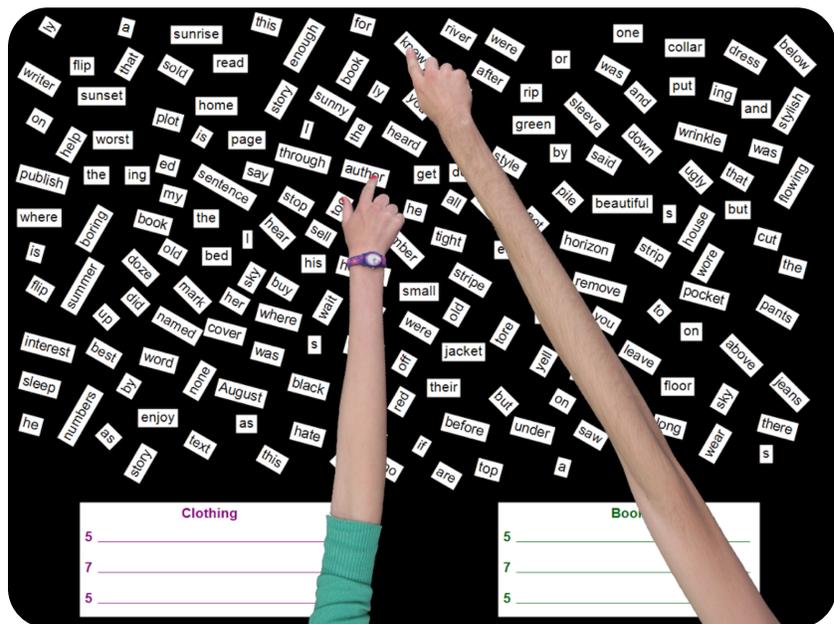
behaviours we observed when people interacted using their physical arms. We added a tactile sensation of touch by vibrating the mice, and changed movement characteristics (slowed them down), when they touched embodiments. People started avoiding touching, and we saw behaviours emerge that were similar to those observed when people interacted using their physical arms: people took turns,

and followed rules of personal space. Overall, augmentations make embodiments feel more real.

Our work demonstrates how system designers can create new engaging experiences, warming the 'often cold' interactions we have with digital systems.

In This Issue:

SurfNet Workshop 2014 to coincide with Canada 3.0 May 2014

Enhancing Communication, Collaboration, and Coordination during Emergencies

By Alaa Azazi, Apoorve Chokshi, Chris Burns, Daniel Sabourin, Gellert Kispal, Mandy Wong, Sydney Pratte, Teddy Seyed, Frank Maurer

Flooding affected thousands of people living in Southern Alberta less than two weeks after the SurfNet Summer 2013 Workshop in Calgary. During this emergency, Calgary's emergency operations centre (EOC) was a common site during the suppertime news, and once the flooding was over, the citizens had a better appreciation for such a facility.

Since January 2013, the Agile Software Engineering (ASE) group at the University of Calgary has worked with C4i Consultants, a Calgary-based emergency simulation company, to create an EOC prototype. This prototype uses multi-surface systems (tablets, tabletops, and wall displays) to enhance communication, collaboration, and coordination between all involved parties (EMS, HAZMAT, and police) during emergencies.

Our prototype allows for interaction with data across three multi-surface devices: tabletops, tablets, and wall displays. The tabletop allows emergency teams to work collaboratively to form a common operating picture that can be shared with the entire room through a wall display. Secondly, team members with tablets can transfer data to and from the tabletop using simple and natural gestures.

Lastly, a wall display is used to keep the big-picture readily visible at all times through an incident map, traffic cameras, incident cameras, Twitter feeds, and news feeds. Furthermore, the wall display enables team members with tablets to send video immediately with the entire room.

You can see the prototype in action at: http://vimeo.com/70898317.

SurfNet News

- SurfNet 2.0: We submitted a Letter of Intent for a Network Centre of Excellence, *AnalyticsCanada*, on August 1st. Results are announced in October if we are invited to submit a full proposal.

- SurfNet will participate in the Innovate Calgary *Tech Showcase* on Sept. 12, and present 6 demos from our network researchers. More info here: http://www.innovatecalgary.com/Default.aspx?cid=751

- The proposals are in! Special Projects applications were due on August 26th and we received a record 20 applications. Look for Issue 4 to hear about the awardees of $25,000 each.

- Our website is new and much easier to read! Special thanks to our SurfNet Intern, Edwin Chan, for his contributions. Check it out:

www.nsercsurfnet.ca

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