The Uncomfortable Workshop: Exploring Discomfort Design for Wellbeing and Sustainability

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ABSTRACT

According to the latest science of human physiology, we are wired to thrive for certain periods in certain kinds of discomfort. This workshop explores how to leverage that science to improve human wellbeing and to improve sustainability as a side-effect of designing ubiquitous technology to prepare, practice and perform discomfort, brilliantly and under pressure. We will use Design Jams as a key activity to explore and build up this Uncomfortable Design Methodology. There will be prizes.

KEYWORDS

discomfort, cold, fasting, heat shock proteins, cold shock proteins, inbodied interaction,physiology, sustainability

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Your Workshop Hosts

m.c. (link) is a professor of human performance and computer science - researches "inbodied interaction" and leads workshops at CHI (link) on same.

Scott (link) leads the HCI lab in Cmputer Science at University of New Brunswick in Canada and collaborates in Biomedical Engineering with a focus on Mixed Reality and human performance.

Adrian (link) is a Leader in HCI Sustainability Design in the UK and Internationally

Josh (link) leads user experience and design at IBM Research Australia with a research focus in exergames and inbodied interaction.

ACTIVITIES OVERVIEW:
This is a 1 day, open door workshop that will still encourage submitting 1-2 page Uncomfortable Think Pieces along the themes of Prepare, Practice and Perform Discomfort under Pressure and at Scale for Personal Wellbeing and Enviornmental Sustainability. The CfP will unpack these.

PRE WORKSHOP - as part of the web site call for participation, there will be overviews of the research on âĂIJdiscomfortâĂİ informing this workshop. Participants will be strongly encouraged to read the material, review any of the sources of interest towards preparing their 1-2 page Think Piece around how they imagine using Discomfort Design to support Human Performance and Environmental Sustainability. We will be encouraging submission of these to the ACM DL.

DURING WORKSHOP: DESIGN JAMS are hands on CORE ACTIVITIES to facilitate as many candidate design approaches around discomfort to support human performance and sustainability as possible , we will use Design Jams to consider concepts relative to how solutions address both to performance and sustainability. All candidates, main discussion points, and best insights, as assessed by the whole group, will be recorded as part of the workshop outcomes towards building up a lexicon of ideas, rationales and approaches. We will have three to four design jams over the course of the workshop. These Jams will be seeded from the submitted think pieces.

POST WORKSHOP ACTIVITIES: are described in How Deliver Impact, above, including in particular the Curated Uncomfortable Blog and planned workshops.

INTRODUCTION: DIFFICULT VS EASY LISTENING TIME

CONTEXT: We are wired to perform at our best when we are uncomfortable. Whether that discomfort is being chilly, being hot or hungry, our bodies - including our brains - thrive and even rejuvenate from these specific physiological stresses. Pedaling a stationary bicycle, all out, for thirty seconds, 3 times, with a pause of 1m between these bursts, is draining. The result is a genetic up-regulation of oxygen that improves physiological function for mitochondria (the metabolic powerhouse of our cells) Burgmaster 2008. Breath restriction post hyperventilation has been shown repeatedly to significantly improve immune response [Kox 2014] Both uncomfortable doses of heat [Husain 2018] and cold [Roszkowska 2019] have distinct restorative properties. And perhaps the most compelling research in terms of quality and increasing quantity is the role of deliberate fasting - being hungry and still going without food - in regenerative properties. SO much so, various forms of fasting have been used with cancer treatments and are showing much lower amounts of chemotherapy having equivalent or greater benefit [Lee 2012]. In terms of cognitive performance, chronic challenging physical activity (where one feels one is doing hard work) is strongly correlated with improved cognitive performance [Rathore 2017]. WhatâĂŹs more, not only do we thrive in this discomfort, we adapt to it, with the effect of becoming increasingly resilient.

Thus, by reducing the heating in winter from 22 to 19C, by taking off a sweater to be a little cooler, deliberately, we can increase our physical and mental performance on the one hand, and reduce energy costs and improve sustainability on the other.

The goal of this workshop is to introduce this science of discomfort to explore together how we can co-design approaches that help people: prepare, practice and perform discomfort, deliberately for personal benefit and global sustainability.

WORKSHOP OVERVIEW

GOAL The workshop will both to introduce and explore the necessary role of discomfort in supporting and enabling (rather than compromising) human wellbeing and performance, and from this to consider how (1) discomfort design can help enable environmental sustainability and (2) improve health and wellbeing and (3) opens a significant design space for ubiquitous and pervasive computing.

PATH TO ACHIEVEMENT There are two paths to achievement for the workshop goals. THe first is that the workshop itself will be framed as an open space first to present and discuss the concepts of human discomfort and then to explore the possible roles of discomfort design for ubiquitous and pervasive interactive technology, especially as support for both human wellbeing and environmental sustainability.

We see particular immediate relevance for those in the UBICOMP community working on human health, wellbeing, play, sustainability, the built environment, human-building interaction, but the

SCHEDULE MORNING

- MORNING OVERVIEW PART ONE: 30 minute session overview and review of the SCIENCE of discomfort in enabling human performance, from leveraging heat-shock proteins to aid cognitive performance and mitigate depression, to breath restriction for improving immune function, to the genetic regenerative components of human fasting and the role of hunger in enabling wellbeing longevity and social cohesion.
- Introductions of Think Piece Authors. These will be spread across the morning between sessions, each showcasing 3 -5 participants - pending workshop numbers.
- MORNING OVERVIEW PART TWO: 30 Minute overview on science of Preparation, Practice and Performance.
- Introductions Set 2
- Morning BREAK
- MORNING: DESIGN JAM ONE - THEME Thermal Discomfort : COLD
- Introductions - - Brief Introductions from 3 -5 participants - pending numbers.
- MORNING: DESIGN JAM TWO - THEME HUNGER
- Introductions - - Brief Introductions from 3 -5 participants - pending numbers.

workshop is open to all. And will be an âĂIJopen doorâĂİ workshop. We will very much encourage inclusion of submitted think pieces in the Digital Library.

WHY IS THIS TOPIC TIMELY AND RELEVANT

The role of technology - not just digital technology - seems in large part to be to make things easier for us, from the shoes on our feet to the central heating or cooling in our workplaces to the near immediate delivery of online ordered goods.

Intriguingly, however, over the past 30 years, as digital technologies have become both cheaper and near ubiquitous, from computerised environmental controls in buildings to cellular networks for no down time connectivity between people via the ubiquitous individual smartphone, we have also seen the exponential increase of so-called lifestyle diseases: obesity, cardiovascular, type II diabetes, stress, chronic lack of sleep - these are all diseases of abundance. One may even say these are diseases of extreme comfort.

That is, we have designed our environments such that for the majority of us, and for most contexts, most of the time, we do not have to be, experientially, in our bodies. Indeed designs often limit feelings of the environment, of our selves. In particular, we do not have to feel for instance physiological discomfort. We stay dry when it rains, warm when it's cold; we rarely feel hunger for longer than it takes to grab something to stave off the sensation - food is almost always in reach, In large car cultures like north america and much of the UK, EU and Australia, we are transported with little physical cost from one location to another.

In terms of timeliness, there are two key costs to our comfort orientation in our designs: Sustainability: our levels of comfort have.high costs on sustainability - from energy costs to ensure constant 22C no matter the temperature outdoors, to having meat at every meal, our local comfort is expensive globally. Wellbeing: As the science of our neurology, gentics and microbe grows, itâĂŹs abundantly clear that we are designed - perhaps ironically - to be at our best when certain systems are taxed. For example, research on human fasting is showing that we rejuvenate in incredible ways when we actually simply stop eating for approximately 12-13 hours [Chaix 2014].

WHY UBICOMP 2019?

There are many groups that focus on simpler/healthier, more sustainable living.They are frequently presented as kind of a granola approach to health and wellbeing: unplugged, off the grid, quiet, less is more, minimalism etc. Those arguments make sense on many levels. These approaches are often the prerogative of the affluent rather than the average. The focus has not been to achieve scalable levels of impact in modern cultures. A key focus of this workshop, and a role for UBICOMP expertise is its experience in broad-casting: a principle/vision of this workshop is to #makeNormalBetter@Scale [schraefel 2017]. Another focus of the workshop is not just in time support either for Discomfort, but

SCHEDULE AFTERNOON

- LUNCH
- AFTERNOON SESSION One: PLENARY PRESENTATION - Measures of Discomfort Design for Sustainability and Performance/Wellbeing - Overview of measurements used in Athletics and Energy. Exploration of applicability.
- Quick introductions from Open Door Participants.
- DESIGN JAM FOUR -Thermal Comfort: HEAT - focus on preparation and practice desings
- BREAK
- AFTERNOON SESSION TWO: OUTCOMES / WRAP - Overview: No Pain, No Pain - What are key features of Discomfort Design for Ubiquitous, Pervasive Approaches? Project Ideas going Forward. Invitation to Contribute to the Discomfort Design Blog (similar to the human computing blog)

Note on References

For space, references are included in-text in brackets by Author Name, Date via hypertext link. With acceptance, we will edit the text if required to make room for these references in this section

especially to consider how to create intelligent IoT that can help people prepare, practice and then perform discomfort - including under pressure.

Sustainability has long been a part of UBICOMP; health and wellbeing, have likewise grown topics here, as per the number of health articles in the last several issues of IMWUT. This workshop may be the first formal structure where human physiology, performance and environmental sustainability have been brought together, uncomfortably. The Discomfort perspective, presented here for the first time anywhere, will let us road test a novel and potentially highly impactful game-changing methodology for IoT in the workplace and homes.

HOW DEVELOP IMPACT

General Impact will be from the design ideas generated in the workshop will act as kindling for the participants to take the work forward into their own work, and share ideas with their colleagues. Thus, the workshop will seed forward ideas for this approach which we anticipate seeing in both health and wellbeing as well as in sustainability projects in the coming year. **Specific Impact Activities:** As an outcome from the workshop, we will be producing a Curated Blog like the Human Computation blog, that is curated, seeking submissions of ideas and videos of prototypes that blend together discomfort and sustainability. We will be hosting Calls for Proposals, and working with industry like IBM, Facebook, Amazon and other collaborators to contribute Prizes for Uncomfortable Projects. Pending the acceptance of this workshop, we will be applying for an immediate follow up focusing on Group Discomfort for CSCW, where we will be seeking more formed research papers from participants, towards full papers for CHI 2021. We are also keen to ensure that this approach connects with industry, hence we are actively engaging with these industry partners to offer keynotes and to feature examples from the workshop and help these industries discover new talent in this new area of discomfort for sustainability, in particular in terms of co-design of prepare, practice and perform brilliantly and deliberately in discomfort - even under pressure

THE UNCOMFORTABLE CONCLUSION

While many of us may think of sustainability as causing discomfort - having to cycle in the rain to get to work rather than be in a car; chopping wood for a fire when tired rather than turning on an electric light - weâĂŹre proposing a new kind of functional discomfort - that is designed to yield sustainability as a side effect. We are proposing - to explore in this one day workshop how to use the discomfort we actually thrive in - to inform IoT design to #makeNormalBetter for all @scale. This workshop is perhaps a global first step to building that outcome. #EOF - 4Pages -

ADDENDA - PLAIN TEXT CALL

The following on acceptance will be cut and added in a separate document.

Come Join the Most Uncomfortable Workshop at UBICOMP -

It's true: human beings are wired to perform at our best when we are not comfortable - Being a little cold can be great for some kinds of thinking; being hot likewise helps with mood and cognition. And being hungry is one of the most powerful regenerative properties we have.

This workshop asks the question: can we use our discomfort not only to improve our wellbeing - physically and mentally - but also as a side effect - to improve our sustainability? Consider what lowering our heating temperature may do for us and the environment.

This 1 day workshop will also explore how we develop and adapt with such discomfort practices - how use IoT for instance to help prepare, practice and then perform our discomforts?

To explore these questions, through our workshop Design Jams on Discomfort you will:

1) Learn how to leverage Hunger, Cold, Heat, Fatigue deliberately not only to feel fantastic and perform at your best but to improve sustainability in the built environment and beyond - as a side effect!

2) Explore new Design Concepts of Prepare, Practice, Perform and Pressure for Internet of Things /Ubiquitous computing designs

3) Co-design and co-create the new methodology of discomfort design

4) Produce new Uncomfortable Design Prototypes to map the contours of the uncomfortable for sustainability.

5) Explore how discomfort design can help scale sustainability through motivated self-interest and self-benefit

6) Create a new uncomfortable design blog to build up and explore uncomfortable, design for health wellbeing and sustainability

7) help lead a new area in HCI

To that end, we are inviting 1-2 page think pieces (for inclusion in the ACM Digital Library) on how discomfort ideas, discussed on the Workshop Website may be translated into designs to enhance wellbeing and support sustainability.

Please note: this will be an OPEN DOOR workshop, foregrounding co-design together, but participating with a think piece will both help you get the most from the workshop and ensure the activities are engaging for you: they will be the foundation for those activities.

If you design for health wellbeing and / or sustainability If this just sounds interesting and you'd like to learn more about your own physiology and the connection to the environment - come join us for the day - and embrace the joy of discomfort to help makeNormalBetter for all

THERE will be a website address here on acceptance of the proposal.