The research participant continued to stand, lean, and wave her arms in an attempt to get a popular social robot to recognize her. I had left her alone 10 minutes prior so that she could complete a 20-minute unstructured social interaction with the robot. The scene had occurred repeatedly over the past few weeks with approximately 3 out of every 10 participants who used the robot. Everything about the interaction would proceed as expected until it was time to perform tasks which required the robot’s facial recognition software. At the surface, the problem seemed to point towards faulty design and potential usability issues which negatively affected the user experience. And while these things were certainly true, the underlying issue affecting this social robot was much more insidious. The robot was having trouble with the participants’ skin color; the darker the skin tone, the higher the number of facial recognition-associated interaction problems. If the skin tone was dark enough, the facial recognition program was unable to recognize the user or their movements among other objects in the room. Whether the robot’s design team used diverse user samples in their development process is unknown. What is clear is that the human-robot interaction difficulties introduced by this skin-related problem perpetuate race and ethnicity-related structural issues in our society by instilling them in technology. Although likely not the intent of this particular company, their robot perpetuated racism. Only users of light skin color could use the robot successfully. All the participants who identified as Black or African-American, as well as some students of central Asian descent, were unable to use the facial recognition based games.

By now, most of us are well aware that racial tensions are high in our country. The Black Lives Matter movement has impacted broadly, with many individuals seeking actionable social change and others offering alternatives or standing against the movement. Regardless of your stance on the underlying social structure of our country or any potential issues that arise from it, as human factors professionals we should care about the people whose “factors” we optimistically promote in our industry. The science of human factors is only as objective as the mind of the people who practice it.

Products are often centered on the user, but who is the user we are centering on? Often times, as a result of our infatuation with frequentist analysis methods, our user-centering is done on the average user or participant. In lab, we hope that the behavior exhibited by the majority of participants is ecologically valid. In industry, we cross our fingers after implementing technology that was rated high in usability by most participants. The problem with the frequentist approach is that it favors the majority population of our samples. This disadvantages minority groups since any race, ethnicity, or sexual-identity driven effects which might be present in the data can be washed over by the data points of the majority. Of course, there are statistical ways to correct for this, but while many of us give participants demographic surveys which include... (Continued on Page 3)
As many of you know, especially those of you who looked at the bottom of page 1, the HFES Annual Meeting in Chicago is cancelled. As a result, no SGA-funding bill will be introduced this year by the HFES student chapter. Sure, we’d love to ask for the money anyway so we can all ride the middle seats in American Airlines and quarantine for two weeks in Illinois, but the powers that be call this unacceptable.

“We need to talk.” — Jakob Nielsen to Don Norman, concerned about his inability to stop designing things every day.

**HFES Bill and 2020**

**American Psychological Association 2020**
Washington, D.C.
August 6-9th
VIRTUAL CONFERENCE
$15-30 for students.

**HFES 2020**
Chicago, IL
October 5-9th
VIRTUAL CONFERENCE

**International Society of Gerontechnology 2020**
Trondheim, Norway
Now: October 7th—9th
VIRTUAL CONFERENCE

**Technology, Minds, and Society 2020**
Denver, IL
VIRTUAL CONFERENCE
TBA

**Psychonomic Society 2020**
Austin, TX
November 19-22nd
VIRTUAL CONFERENCE
Submission Deadline: July 15th

**Florida Undergraduate Research Conference**
Tallahassee, FL
February 26-27th
Abstracts open Fall 2020

**HRI 2021**
Boulder, CO
March 8-11th

**Southeastern Psychological Association 67th Annual Meeting**
Orlando, FL
March 17-20th

**CHI 2021**
Yokohama, Japan
May 8-13th
HYBRID VIRTUAL/IN PERSON
Submission Deadline: September 10, 2020

**International Convention of Psychological Science 2021**
Brussels, Belgium
POSTPONED

**Missing your meeting? Let us know so we can include it. Contact info on last page.**
race, ethnicity, and gender information, we often fail to properly analyze this data in the context of the research questions. Research and user data from minority populations should be examined with proper care and compared to the overall results of the study.

The majority view might be great if you are trying to decide which colors should be available for your company’s next smartphone, but this approach can be dangerous to your conclusions if it instills biases into your results which perpetuate societal inequalities. When you design technology that can only be used optimally by majority populations, problems arise. Let’s suppose the aforementioned robot was successfully designed to assess depression in older individuals, alerting hospital staff if a patient required social perception or clinical intervention. Given the problems with the facial recognition software, the robot would correctly assess depression most of the time among lighter-skinned patients, some of the time among medium-toned skin patients, and rarely (if ever) among darker-skinned patients. Any improvements in health outcomes related to the deployment of the robot in this medical setting would only benefit the lighter-skinned patients. Each patient’s mental health improvement, as well as any related physical health benefits, would be dependent on the color of their skin, perpetuating racial and ethnic injustices. If the facial recognition problem had been discovered through properly conducted usability testing, employing diverse and representative samples, this technological inequality would not have been introduced and the downstream effects on health would not occur.

In academic settings, studies which fail to take into account minorities or marginalized groups can reinforce the biased construction of knowledge that has pervaded our field for much of its history. Given APA’s 2019 president Rosie Phillips Bingham’s background as both a black and community psychologist, it was no surprise that the 2019 annual convention was focused around poverty, as well as the interrelated research on minority populations. Among the many sessions presented, one highlighted how cognitive biases varied across individuals of diverse racial backgrounds. Time after time, in each study presented, it was clear that racial issues present in society had a top-down influence on social cue perception of basic emotional stimuli. Studies such as these point to the importance of our need to assess how all members, not just the majority of our populations, fit into our theories, models, conclusions, etc. What cross-cultural factors might affect categorization of threat stimuli in specific cultures (not just broad cross-cultural categorizations such as individualism and collectivism)? How does our own sexual identity play into our user experience when interacting with a female virtual agent? How do people who live below the poverty line perceive the implementation of robotic surgery? These are just some examples of an almost interminable line of research that can be conducted related to diversity.

As a human factors student or early-career professional, it might be difficult to visualize where you fit into all of this. It may also be that you lack the motivation to address it. However, minorities and marginalized groups are not a small portion of the population. When you join them up together, they form a substantial portion of your user and research participant base; well over 155 million people here in the US. If you are to be a true human factors professional, then don’t forget nearly half of your humans and their factors. Think about your results and how they might vary by population groups. Try to forecast what kind of negative impacts might result if you do not properly account for diversity. Separate your data by group and see how it behaves with groups all in their own. Would the conclusions still be the same? To be a successful human factors professional, you need to get in the proper mindset, realize that most of our background knowledge was constructed by individuals not in these minorities, and properly account for everyone in your data if possible. These things might be easy to ignore, but their effects on our society will be evident.

A diversity example: If you design virtual agents, such as Replika above, care should be taken to provide representative and diverse agent options. Research should focus on ensuring the user experience is positive across diverse users.
SOCIAL ACTIVITIES

Our three summer social activities were a virtual success. Our Fall social activities will be announced soon.

WORKSHOPS

*Usually at 5 PM*

Clay and Briana presented their workshops earlier in the semester to much success. We would like to thank our presenters and all of you who attended these events and hope these workshops were useful for your career and research development. Only one workshop remains this semester, with another planned for Fall. Let us know what you would like to learn in the future:

July 16th: Fernando presents “Qualitative Methods Make Me Feel Dirty.”
- This qualitative analysis workshop will focus on the use of grounded theoretical approaches to explore interview data.

August 20th: Fernando presents “Ethnography for Lab Lovers”.
- Ethnography is a sought after usability and user experience tool. This workshop will provide a quick look at the pros and cons of the technique.
Recent Publications


IF YOU HAVE A RECENT PUBLICATION YOU WOULD LIKE TO FEATURE IN OUR MARCH ISSUE, SEND US AN EMAIL AT THE ADDRESS ON THE LEFT.

“My research findings were shocking.” - Stanley Milgram

Research Petsistants: Late breaking research.

PI: Fritter

Advisor: Allison E. Garibaldi

Research: Managing the Human: Interactions between Loud Meowing and Proximity to Human’s Face on the Rate of Treat Provision.

University of Central Florida
Human Factors and Ergonomics Society
Student Chapter