United Against Racism and a Call for Action

By Bram Vanderborght and Allison Okamura

The recent tragic loss of George Floyd—and earlier of Ahmaud Arbery, Breonna Taylor, Oscar Grant, Stephon Clark, Mario Woods, Jessica Williams, Stephen Taylor, Eric Garner, Tamir Rice, Trayvon Martin, Sandra Bland, Amadou Diallo, and many others—has returned the spotlight to issues of systemic racism and inequity. The result has been a widespread movement to actively combat racism through protests, education, and new initiatives.

We are deeply saddened by tragic losses of life due to racial violence. We stand with the protests and condemn all forms of racial violence, ethnic profiling, and racism. Participation in initiatives for change by diverse people around the world gives us hope that we are unified by common values and that real change is possible.

Our international IEEE Robotics and Automation Society (RAS) is represented in all geographical areas, and many research groups have a rich diversity of nationalities—but this is insufficient to claim success in terms of inclusion. We must acknowledge that there are very few black roboticists worldwide. Moreover, many communities are left out of technological progress and may even be harmed by it. We need to self-reflect and recognize that our community can do much better when it comes to being inclusive. Two important aspects we should consider in our field are how robots impact society and

who participates in the development of robotic technology.

Engineers and computer scientists have to deal with moral choices. Technology and ethics are not separate domains. We must recognize that technology is not neutral, and it is no different with robots. Wernher von Braun, the leading figure in the development of rocket technology in Nazi Germany, was a so-called separatist. Von Braun did not consider the ethical and social implications of his work. Unethical design choices are sometimes made on purpose. For example, author Robert Caro has explained that bridges designed in New York City were built with low clearance because the designer wanted to prevent buses carrying blacks and Latinos from New York City to Jones Beach and other parks on Long Island. Other examples of moral dimensions in technology are sometimes accidental but still have a chilling effect on diversity and inclusion. A widely seen example is the "racist automatic soap dispenser" (https://youtu.be/YJjv_Oei-Hmo) that doesn't work for people with dark skin tones, forcing work-arounds like holding a white napkin underneath. This is a consequence of designers who do not foresee use cases or test the technology with a wide group of end users. This is not just a technical error; it is an ethical mistake.

How Do We Change?

First, we must consider ethics in our work. Major tech companies have now publicly distanced themselves from the facial-recognition tools used by police,

in large part because these tools have been found to misidentify people of color, especially women of color, at higher rates. This has been compellingly demonstrated and analyzed by Joy Buolamwini and Timnit Gebru. Some people call for national laws, others for pushing the pause button until racial biases and other inequities are removed from the code, and still others want to ban the use of these tools entirely.

Another need more specific to robotics is the elimination of terms like "master" and "slave" from our code, documentation, and literature. What these terms represent in their narrow technical sense is not the issue. Rather, the use of these terms demonstrates a lack of consideration of the substantial emotional baggage the words carry due to their historical use. The RAS Technical Committee on Telerobotics is formulating alternative terminology, and we believe it is the responsibility of both authors and reviewers/editorial boards to prevent their use in publications, given their triggering nature and the fact that their use is not intrinsically necessary. Twitter, for example, took action and announced that it will also change words such as "blacklist" "grandfathered," and "man hours."

Too few researchers recognize the social aspects of robotics, including the intentional or unintentional assignment of race and gender. In this issue of *IEEE Robotics and Automation Magazine*, the article "Do Robots Have Race?: Race, Social Construction, and HRI" by philosopher Robert Sparrow [1] discusses this issue and the possibility that one of

the meanings conveyed by robots might be race; the article problematizes the largely unexamined assumption that robots should have white surfaces.

Moreover, the history of slavery and the historical associations between robots and slaves mean that the racialization of robots poses ethical and political challenges in the building of humanoid social robots. Although in-depth ethics courses are rarely required outside of medical school, the social demand in other disciplines such as engineering is great. The awareness and knowledge of (technical) ethics must take place systematically during education. Engineers, computer scientists, and other future developers should consider ethical questions and learn techniques to provide answers, such as value-sensitive design. In this way, ethical questions can become self-evident and an integral part of design and programming. Resources exist to help us, including courses (e.g., https://ethicsinsociety.stanford.edu/research-outreach/ethics-technology-initiative) and books (e.g., *Homo Roboticus* by Jacobs et al.). Mistakes such as the racist soap dispenser could be avoided with both improved training and a diverse team of designers and evaluators.

Second, we need to improve diversity and inclusion in our field. This means actively encouraging people from underrepresented groups—from young children to Ph.D. students—to become practicing roboticists in industry and academia. We need to create environments that are welcoming, not intimidating, in our schools, research labs, companies, and conferences. This can be achieved by using inclusive language; reaching out personally to meet, invite, and congratulate diverse individuals who may not be aware of their talent; and combating "imposter syndrome" through reassurance and positive feedback. Some efforts, such as for graduate school admissions, are institutional in nature and require self-aware and passionate leaders to create change. Other efforts are more personal; we often hear stories of how individual mentors have made a profound difference in encouraging a person from an underrepresented

group to enter the robotics field. Thus, we can all play a role in recognizing our own biases and actively making our field attractive to a diverse population.

Along with this, we must be aware that minority groups sometimes need safe spaces—virtual or physical places and events that permit gathering with supportive colleagues. These include the RAS Women in Engineering Lunch, usually held at both the IEEE International Conference on Robotics and Automation and the IEEE/Robotics Society of Japan International Conference on Intelligent Robots and Systems (at which people of all genders are welcome). Other fields have organizations, such as Black in AI, that address the particular challenges of black people, whose numbers are woefully low in robotics. A key point is that we must not burden minority groups with the responsibility for change. Roboticists who are not members of underrepresented groups are encouraged to organize events, mentor individuals, and create opportunities to improve diversity. We should do this not only because it is right but also because it will make our technology better for society.

This column is a call for action. What can *you* do in the robotics community to embrace antiracism and develop inclusive technology? We implore members of the international robotics community to learn, reflect, and act.

Acknowledgment

Reference

[1] R. Sparrow, "Do robots have race?: Race, social construction, and HRI," *IEEE Robot. Autom. Mag.*, vol. 27, no. 3, pp. 144–150, Sept. 2020. doi: 10.1109/MRA.2019.2927372.