Yen-Chia Hsu | Diversity Statement

I am committed to supporting minority groups with my research in community empowerment. An example is a collaboration, around an air quality monitoring system, with a Pittsburgh local community (representing about 70,000 residents) who suffered from long-term air pollution [1]. They typically are financially impoverished and have insufficient resources to relocate. The quality of life of these residents was severely affected by cardiorespiratory illnesses, such as asthma. Moreover, their daily activities were highly restricted by air quality conditions. For instance, they could not freely exercise outdoors or open windows at night because the air pollution causes eye, nose, and throat irritation. The air quality monitoring system has enabled community members to demonstrate how local air pollution has affected their living conditions and has also indirectly caused the closure of the pollution source. A follow-up study further indicated that emergency room visits for asthma dropped significantly (38%) after the closure[1], which shows an increase in quality of life. In certain ways, my work has raised public awareness in air pollution and improved equality in the Pittsburgh area. It has also helped bridge the gap that often exists between computer science research and local concerns, which has resulted in sustainable long-term relationships between the university and communities. In the future, I plan to continue co-designing and deploying interactive systems to empower communities. Also, I will contribute to improving diversity, equality, and inclusion by:

Ensuring technology transparency, accountability, and accessibility to the public. When conducting research, my design philosophy is to open the interactive systems for community feedback and public criticism. I will also continue the tradition in my prior works of open-sourcing the system code, which allows other researchers or affected communities to reuse the system components when pursuing sustainability. For instance, California communities have adopted my open-sourced prior work, Smell Pittsburgh, to crowdsource air pollution reporting[2]. In the future, when deploying interactive systems, I will also make sure that they work on various low-cost devices since under-resourced communities may not have access to expensive high-end computing devices.

Mentoring students from minority groups and empowering them to address local concerns. For teaching and mentoring, I plan to recruit students actively from minority groups. However, I recognize that minorities may have insufficient resources to attend information or computer science schools, which may be caused by the inequality of social, educational, and economic resources. To mitigate this, I also plan to adopt my current lab's summer research program of mentoring high school interns from minorities. I believe that participating in university research can equip them with technical skills (e.g., interaction design, computer programming) and, more importantly, empower them to address community concerns by showing the potential positive impacts that they can contribute to society.

Making my funding sources transparent to the public. Although anonymizing funding sources seems to be a solution of putting money from unethical sources into good uses, I worry that this can eventually become a shield for bad actors to evade accountability and common sense. Such anonymity may indirectly benefit bad actors (who exploit minorities) by enabling them to hide behind the accumulated power and influence, which can be harmful to society in the long term. In the future, I am committed to creating and facilitating a healthy culture of openness and transparency in learning and research environments. Since my research field is related to environmental and social justice, I think that it is essential to open my funding sources for public scrutiny.

References

[1] **Yen-Chia Hsu**, Paul Dille, Jennifer Cross, Beatrice Dias, Randy Sargent, and Illah Nourbakhsh. 2017. Community-Empowered Air Quality Monitoring System. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. Association for Computing Machinery, New York, NY, USA, 1607–1619. DOI:http://dx.doi.org/10.1145/3025453.3025853

[1] ER visits for asthma dropped 38% the year after one of Pittsburgh's biggest polluters shut down – https://www.ehn.org/shenango-coke-works-closed-asthma-dropped-2566777141.html

[2] California towns adapt Carnegie Mellon's Smell Pittsburgh app – https://archive.triblive.com/local/allegheny/12632255-74/california-towns-adapt-carnegie-mellons-smell-pittsburgh-app