Understanding Heat Resiliency via Physiological, Mental, and Behavioral Health Factors for Indoor and Outdoor Urban Environments

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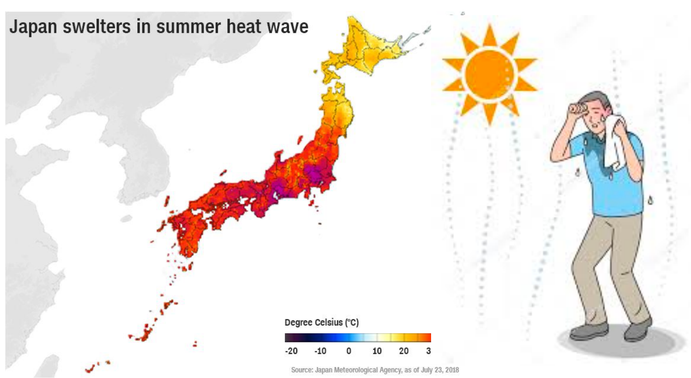
Problem: Extreme Heat



Physiological indicators: core body temperature, sweat, vitals (pulse, breathing rate)

Sensing: How to sense these? Issues of clinical importance, privacy, etc

Modeling: Individual's exposure, thermal comfort

Mental Health: How does this affect mental health of individuals?
Behavior: How do individuals adapt their behavior in extreme heat?

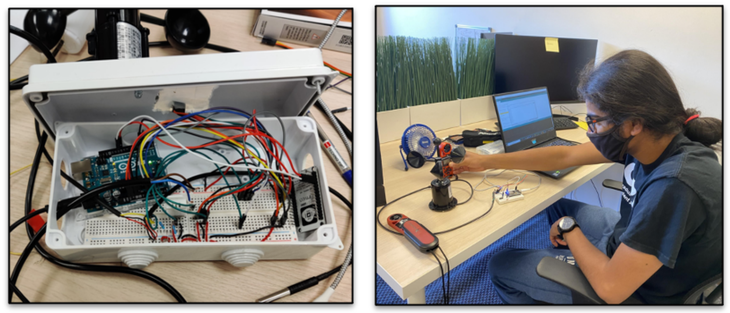
Community: How does cultural factors (Japan, US) affect heat resistance strategies?

Intellectual Merit:

1. Sensing physiological and environmental markers for heat stress and exposure to formulate user-centric thermal comfort model
2. Mental and behavioral models for individuals exposed to heat conditions, and how they interact with one another.
3. Cross-cultural factors across communities in the United States and Japan.

Activities

- Developing initial tools/frameworks for thermal comfort sensing and crowd behavior
- Studying individual's behaviors and attitudes to extreme heat, particularly outdoor activities and public space usage
- Planned engagement with community partners in Tempe, AZ/Tokyo, JPN



Sensing tools being developed

Broader Impacts: Research will interact with key stakeholders in the three communities across the United States and Japan, and insights gleaned from the research will be shared with the community to develop effective strategies to build climate-smart cities

Sustainability: Continued engagement with community partners, follow-up research studies to investigate efficacy of proposed solutions are planned.

Next steps:

- Deployment of pilot studies to understand outdoor space use in heat
- Virtual workshop to bring stakeholders and community members

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