Towards TinyML Solutions for Extreme Heat Sensing for Urban Climate Science

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www.tinyML.org
**Problem Statement:**

Extreme heat is getting worse. **Measure:** Mean Radiant Temperature and how it affects humans (it’s not just temperature!)

**Impact:** Climate, health, urban design

- Urban infrastructure can increase heat (urban heat islands) and mitigate heat (vegetation, urban form, materials). Sensing can help provide feedback and information for infrastructure as well as health warnings.
- Initial impact: Deploy MaRTinies in the city of Tempe, AZ in local parks, measure heat behaviors for extended period of time (one month). Inform the city of Tempe of outdoor space usage.

**tinyML solution:**

MaRTiny: Low-cost mobile platforms for biometerological sensing (reduced cost from $20K to $200!) Additional functionalities: embedded computer vision to detect shade usage by pedestrians

**Call to Action:**

- Next steps: How can heat sensors be coupled with health risk analysis to provide feedback for cities and pedestrians?
- Challenges: (1) how to influence policy and urban infrastructure? (2) how to communicate data and health risks to the general public, especially to underprivileged groups who are most at risk?
- HELP NEEDED: tinyML solutions can help improve technology, make heat sensing cheap and ubiquitous. TinyML community can help spread awareness about climate change and its effects on people’s health, impact on cities

**EXTREME HEAT IS LEADING CAUSE FOR WEATHER-RELATED MORTALITY IN THE US**