Netzero Carbon Computing Workshop 2023
Call for Papers/Participation

Februrary 25, 2023

https://netzero.sysnet.ucsd.edu/

Co-located with HPCA 2023

The large and growing societal need for compute has resulted in a large and growing carbon footprint, both from deployed devices' energy demands as well as the manufacturing and disposal of devices throughout their lifetime.

Netzero carbon computing is the goal to build large computing systems from edge/IoT to large scale data centers such that their total carbon generation is net zero. This involves the use of renewable energy sources, methods for computing to offset carbon generation in other areas, as well as full life-cycle study and mitigation of carbon throughout the system lifecycle. It may involve creative reuse of existing silicon devices as well as methods to build new ways to do computing that rely less on carbon emission. Of special interest are ways to change the computing mindset from innovation for the sake of innovation to conservation and targeted use of computing for solving important challenges of society. Considering the tradeoff of specialized computing versus general purpose computing for different problem areas is of interest.

Netzero carbon is considered to be a sumtotal of zero carbon among embodied operational, recycling, and disposal stages of the computing and development lifecycle. Netzero proposals and approaches for other environmental impacts are also welcome.

Topics relevant to this workshop include (but are not limited to):

1. Sustainable compilation for next generational sustainable computing architectures
2. Techniques to address full life-cycle reduction of carbon from manufacturing to end-of-life.
3. Programming language support for energy and carbon awareness
4. Cross-layer transparency related to energy availability
5. Hardware reuse and alternatives to premature end-of-life
6. Security support for legacy devices and devices past their engineered end-of-life
7. Debloat, especially for large, distributed software systems
8. How computing fits into the digital economy and sustainable ecosystem.

To participate, *please submit an abstract (up to 2 pages)* from a position statement to research work. The format for the workshop lightning talks from abstracts with discussions to follow, panels, and challenge-based debates on the right directions to take to create netzero carbon computing. While we will distribute these abstracts at the workshop, presentation at Netzero Carbon Computing will not prevent publication in a later conference or journal.

Deadline: January 15, 2023.