



HotPower 2008 Panel: Looking between the street lamps

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Caveats

- I'm not really an expert on "power" issues
- I missed the first half of today's workshop
- I cribbed a lot of this from Partha Ranganathan and Niraj Tolia of HP Labs

Don't just look under the street lamps for your keys

Feng asked "If I were a grad student looking for a thesis topic, what should I work on?"

- Observation: faddish areas are a bad place to look for thesis topics
- By the time you see papers about a topic appearing in good conferences, it's too late to start a great thesis on this topic.
 - (unless you can show that the emperor has no clothes.)
- So, look for ideas between the pools of light
 - Under-illuminated problems
 - Solutions that aren't solidly within one expertise area

Is the HotPower CFP true?

The CFP says “We do not understand energy and its tradeoff with performance and other metrics very well.”

- Is this really what we don't understand?
- Possible streetlamps:
 - Component power?
 - Control theory?
 - Moving work around?

Some important but under-illuminated (?) problems

- Reliability: as we get more aggressive about optimizing the power/performance tradeoff, does this make our systems less reliable?
 - “Efficiency” can lead to fragility – cf. the credit crisis
 - Can this effect be quantified?
 - Or can we improve reliability through better tradeoffs?
- Org-chart awareness: do the technically-cool solutions we can invent make sense within typical IT organizations?
 - Are you expecting people to work together who won't?
 - Are you expecting decisions to be made on infeasible time scales?

Looking for solutions *between* the street lamps

Good opportunities come from **understanding the boundaries between areas**, not just by being the best expert at one topic.

- Make it easier to write energy-efficient software:
 - Enlist the application programmers
 - Tools to expose throughput/watt, not just throughput
- Energy inputs beyond the computer's power supply:
 - Building computers requires energy, too
 - Disposing of computers costs energy

The image features a central logo for 'LABS hp' enclosed in large, light blue square brackets. The text 'LABS' is in a bold, dark blue, sans-serif font, while 'hp' is in a smaller, lowercase, dark blue, sans-serif font. The background is white and filled with numerous light blue rectangular shapes of varying sizes and orientations, scattered across the page.

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