Rebooting Computing Initiative
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Low-Power Image Recognition Competition (LPIRC)
Workshop at the Design Automation Conference (DAC 2015)
June 2015, San Francisco

Recent progress in computer vision has significantly improved image classification and object detection, albeit with very high computational cost. To realize the potential benefits from these advances in real-world settings, approaches must be viable on low-power embedded and mobile systems including vehicles, smartphones, wearable devices, and robots. This competition, organized under the auspices of the **IEEE Rebooting Computing Initiative** aims to probe the state-of-the-art for low-power approaches to object detection in images, a basic building block of visual recognition systems. Previously the Pascal VOC and ImageNet Challenge (ILSVRC) have evaluated detection accuracy without considering speed or energy consumption. **This is the first competition in which entries will be evaluated based on energy and accuracy over a fixed period of time.**

Register for the competition at http://lpirc.net to obtain access to the training data for the competition and the development kit. The training data is from the ILSVRC 2014 detection competition and includes thousands of labeled examples with bounding boxes for the 200 categories of objects that will be tested. This data can be used to train and validate algorithms and hardware systems for the detection task. For the in-person competition held at the LPIRC workshop at DAC 2015, contestants will bring their systems in order to test power, accuracy, and speed while the systems are performing detection on previously unreleased testing images.

Cash prizes will be presented to winners based on several criteria—lowest power with high accuracy, highest accuracy with low power, etc. Entries that perform well, or use especially interesting approaches will be invited to submit their work to a special issue of the IEEE Transactions on Emerging Technologies in Computing. Students may apply for travel grants to attend the workshop.

The figures below show two examples of labeled images from ILSVRC 2014.

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Committee: Massimo Alioto (NUS), David Atienza Alonso (EPFL), Patrick Groeneveld (Synposys), David Kirk (Nvidia), Gi-Joon Nam (IBM), Vivek Tiwari (Intel).

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