The 2018 IEEE International Low-Power Image Recognition Challenge (LPIRC) has successfully concluded on June 18 in Salt Lake City, co-located with the IEEE Conference on Conference on Computer Vision and Pattern Recognition (CVPR). This is the fourth LPIRC; 21 teams competed in three different Tracks. In total, the teams submitted 131 solutions. LPIRC is the only competition that evaluates computer vision technologies by accuracy, execution time, and energy consumption together. Each team must develop a solution that can identify objects (such as humans, cars, tables) in images and mark their locations in the images. The first track, a new track sponsored by Google, evaluates accuracy and execution time. The second track, sponsored by Facebook, uses the Caffe2 deep learning framework running on NVIDIA Jetson TX2. The third track, unchanged from the first LPIRC in 2015, has no restriction in software or hardware.

This year's winners are

- Track 1: Qualcomm
- Track 2: Seoul National University
- Track 3: ETRI and KPST

The top score of Track 2 is more than twice of the 2017 top score. The top score of Track 3 is nearly four times of the 2017 top score. Since 2015, the score has improved by 24 times. "The purpose of LPIRC is to identify the state-of-the-art in computer vision. Thus, it is important to see significant improvement year after year.", said Terence Martinez, Program Director, Future Directions of IEEE Technical Activities. LPIRC started in 2015 as part of the IEEE Rebooting Computing Initiative, co-chaired by Elie Track and Tom Conte.

LPIRC uses ImageNet as the training data. The referee of LPIRC is open-source and contestants can replicate the competition environments. On June 18, the researchers from Facebook and Google explained how to apply computer vision on mobile systems. More than 100 people attended the presentations. "We will likely see sophisticated vision technologies on mobile phones in the coming years.", said Fei Sun from Facebook. Bo Chen from Google, a member in the organizing committee, said, "This competition has created an infrastructure to evaluate the energy efficiency of vision technologies. We expect to see acceleration of improvements.". Jaeyoun Kim, also from Google, said, "LPIRC is unique because participants need to make their entire systems work."

Alex Berg, a professor from University of North Carolina, said "Over the past four years accuracy improved 13 times but the energy consumption has not reduced much." Another member in the organizing committee, Professor Yiran Chen from Duke University said, "We expect that future winners would need to adopt innovative hardware platforms for better energy efficiency. There is still a lot of room for improvements." Yung-Hsiang Lu from Purdue University thinks future mobile systems could do much more than detecting objects in image, such as understanding behavior and intention in video.

Immediately after the conclusion of 2018 LPIRC, the organizing team has started planning the next competition. After four years of successful LPIRC, the team considers to adopt more

challenging tasks using new sets of data. People interested in joining the organizing team please visit https://rebootingcomputing.ieee.org/lpirc for more details.

LPIRC organizers and Track 1 winners.

LPIRC organizers and winners of Tracks 2 and 3.

Attendees listen to presentations about creating energy-efficient computer vision technologies.