The preliminary round of the 2019 OpenPOWER+OpenCAPI Heterogeneous Computing Design Contest has come to a conclusion.

Here are the finalists in the the 2019 OpenPOWER+OpenCAPI Heterogeneous Computing Design Contest and some great comments from our partners!

Starting in September 24 2019, 21 teams from 14 universities and institutes registered for the contest. After the fierce competition of the mind and technology, 10 teams passed the experts' rigorous review and reached the semifinal.

The finalists are, sorted by team name;

Team	School	Report Name
Baymax	Fudan University	Video Dehazing and Dynamic Target Recognition System Based on OpenCAPI
Cai Xiao Bang	Shenzhen University	Hardware Acceleration for Embedded Storage LDPC Algorithm
Huang Cai Huang	Fudan University	Heterogeneous Systems for Run-time Video Style Migration
Huake Second Team	Huazhong University of Science and Technology	Smoke Concentration Measurement Method Based on Structural Similarity Index with Video
HKUST	Hong Kong University of Science and Technology, Sun Yat-sen University	Implementation of Mean Shift Tracking Algorithm Based on OpenCAPI Platform
KCCT	Huazhong University of Science and Technology	Meta Pruning Neural Network Pruning Algorithm Acceleration Based on OpenCAPI
SDUers	Shandong University	Panoramic Splicing Acceleration Design Based on OpenCAPI
shadow is the light	Xi 'an Jiaotong University	High Performance Hybrid Encryption System Based on OpenCAPI
We Have a Big Name	Xi 'an Jiaotong University	On-line Monitoring System for Transformer Winding Deformation Based on OpenCAPI
The Wind Waves	Xi 'an Jiaotong University	Design and Implementation of Homomorphic Cryptographic Accelerator Based on RLWE

Sincere thanks to our great partners for the fantastic help they gave to the contest to help it run smoothly. They are:
- Alpha Data Parallel Systems Limited,
- CT-Accel Computing Technology (Shenzhen) Co.Ltd.
- Beijing Mellanox Technology Co.Ltd.
- Xilinx Electronic Technology (Shanghai) Co.Ltd.).

Thank you all again for the trust and support to this competition!

Here is just some of the the great feedback from our partners;

Partner Comments

David Miler, Managing Director, Alpha Data Parallel Systems Limited

On behalf of everyone at Alpha Data, I would like to thank you for your participation and winning work in the OpenPOWER+ OpenCAPI Heterogeneous Computing Design Contest. As the benefits of the FPGAs and coherent acceleration gain widespread adoption, the knowledge you have gained from this contest places you at the forefront of the next generation of High-Performance Computing. I hope you had a good experience with the Alpha Data hardware and if you have any comments for improving future products, please let us know. I wish you every success in your continued use of this class-leading technology.

Harry Yu, CEO, CT-Accel Computing Technology (Shenzhen) Co.Ltd. (CTAccel)

I am very happy to see these arts shortlist. The participants choose very good topics from various domains. Some have landing value, and some focus on popular aspects. And in the reports, the solution analysis, key technologies introduction, and test plan are quite completed.

Among those arts, some are about multimedia applications, such as video style real-time migration, video defogging and moving target detection, panoramic stitching etc. The latency in those scenarios can be greatly reduced through heterogeneous computing, which effectively increase the solution landing possibility. Some are big data security focused, such as the hybrid encryption, homomorphic encryption and LDPC algorithms. They are all areas worth of more attention and research. Furthermore, there are researches about industrial control, like the transformer windings online monitoring. It is new and unique, worth of exploring further. In conclusion, I hope all participating teams can reach their goals successfully.

Qingchun Song, Director of Marketing, Asia Pacific, Beijing Mellanox Technology Co.Ltd. (Mellanox)

Taking data as the core of calculation has become a trend of application. Where the data locates, where the calculation should be. The CPU computing, network computing, and storage computing have become the hallmark of building high-performance data centers and computing centers. As a pioneer of network computing, Mellanox has been able to complete the communication calculations during data flows through the network at a speed of 8Tb / s. It not only provides sufficient bandwidth for data transmission in the network, but also solves the problem of data center scalability.

However, the speed of the PCIe bus has become the bottleneck of the network. In details, the current PCIe 3.0 x16 can only support the 100Gb / s network. For 200Gb/s network, it will become the bottleneck. The combination of OpenPOWER and OpenCAPI can effectively solve the bandwidth bottleneck problem of PCIe and

achieve the balance of data traffic from the server to the network. The 2019 OpenPOWER + OpenCAPI Heterogeneous Computing Design Contest provides a good platform for the students, who are pursuing the ultimate application performance, to optimize the application performance on the updated technological ladder.

Xiaoming Liang, Senior Product Marketing Manager, Data Center, Xilinx Electronics Technology (Shanghai) Co.Ltd. (Xilinx)
Heterogeneous computing and hardware acceleration have been hot research directions in recent years. IBM and Xilinx's in-depth study in these fields and related products have given power to these new computing models. All the participating teams showed very strong professional qualities, and most important, the spirit of proactive exploration on new technologies and new directions. Among the finalists, some arts make full use of the characteristics of OpenCAPI to improve performance and ease of use, some use multiple heterogeneous computing modes to allocate computing resources flexibly, and some innovate on FPGA customized hardware units to break performance limits. All the shortlisted arts are combined with actual application scenarios. They show great examples of converting the cutting-edge technologies into realistic computing capabilities. It embodies the positive impetus for technology to be transformed into productivity. Many new research topics were discovered by school students and researchers. They can propose solutions proactively by utilizing the cutting-edge technologies and scientific methods, which can quickly convert to productivity with the support of the industry. Innovation is the growth foundation of Xilinx. We advocate innovation and encourage outstanding students to figure out new solutions for the industry and welcome all the innovation practice based on Chinese technology standards and practical application models. I wish all contestants can ride on the crest of the waves and forge ahead.

Congratulations again to the teams that have entered the semifinal from everyone at the partner organisations and OpenPOWER Foundation!