

Dr. Yuichi Nakamura, Executive Specialist, NEC Corporation



Dr. Yuichi Nakamura received his B.E. degree in information engineering and M.E. degree in electrical engineering from the Tokyo Institute of Technology in 1986 and 1988, respectively. He received his PhD degree from the Graduate School of Information, Production and Systems, Waseda University, in 2007. He joined NEC Corporation in 1988, and he led NEC's research about signal processing and embedded design as a general manager and a vice president of NEC research. Currently, he is an executive specialist at NEC Corporation. He is also a guest professor of the National Institute of Informatics, Hiroshima University, Waseda University, and Tokyo University. He has more than 30 years of professional experience in electronic design automation, signal processing, photonics, and quantum computing.

Dr. Yuichi Nakamura is an executive specialist in NEC. He contributed to manage and lead several innovative projects in signal processing and computing area. His main contribution is as follows.

1) He introduced a project of software and custom processor-based design methods, applied to media stream processing in set-top-box/digital TV/TV recorder LSI design. Since his design methods had rich flexibility and high performance, the design time was significantly reduced compared to all other hardware-based methods. According to his contribution, these chips were sold in the top share group on digital in 2006-2007.

2) He led a digital signal processing design method to optical fiber digital coherent LSI. In this case, one of the design difficulty was how to prepare the test bench for design. He managed a common test bench set for all design phases. Finally, the LSI could be developed without re-spin thanks to his clean test bench set.

3) He contributed the first commercial 4K HEVC based encoder development. Since this product should have been used to 4K board casting system at the 2014 FIFA World Cup, the development time was very short. He proposed all FPGA (Field Programmable Gate Array) based systems and led the FPGA design project. The system was released on time and success at 4K broadcasting during the FIFA World Cup games.

4) He started a novel quantum computing project from 2018. To start the project, he negotiated with the Japanese government and obtained a big grant (more than \$27M USD/5 years) from the Japanese government. Until 2023, his team would develop the prototype of the novel quantum computing system to be specialized for solving combinational optimization problems.

Besides, Dr. Yuichi Nakamura has published more than 40 major international conference papers and more than 25 journal papers, which are related to the above contributions, and had delivered a number of keynote talks at major conferences such as ISCAS2019. In addition, currently, he is in charge of an advisory board member of the Japanese government quantum innovation meeting, a member of the evaluation committee of several Japanese government grant meetings. He is also a member of the technical committee of APSIPA SPS.