Division of Electrical, Information and Communication Engineering	Research field	Massively Parallel and Distributed Systems	Lab. ID EI33
Laboratory web site	https://researchmap.jp/yinoguchi?lang=en		

Research subjects

With the advent of the AI era, there is a growing need for technologies to build large-scale computing environments. To realize these technologies, our laboratory researches about design method of massively parallel and distributed systems and applications. Both hardware oriented research and software oriented research are our scope. Recently, the DSA (Domain Specific Architecture) has been a hot topic to accelerate the execution speed of an application. Our laboratory develops suitable rchitectures for several applications such as CNN-oriented architecture. For Internet acceleration, we use FPGAs to accelerate the detection of digital watermarks that identify music and image files on routers and control their distribution.

Master/Doctor course: Education policy, curriculum, typical activity in the laboratory

Through seminars that introduce the related academic papers and report on the status of research, students will acquire the knowledge and skills necessary to conduct research in either the Master's or Doctoral programs.
In addition to acquiring this knowledge and these skills, each student will work on research topics for the Master's or Doctoral program under the supervision of their assigned faculty advisor. Research findings will be presented at major meetings of domestic special interest groups, as well as at international conferences. Based on the feedback received from these presentations, students will revise their work and submit it to academic journals with the aim of publication.

Daily life in the laboratory, etc.

I plan to set up an environment where each student has their own PC.
The following equipment is available for research:
・GPGPU systems (including nVidia H100, A100, V100, etc.)
・PC cluster for research of distributed computing (14 nodes)
・Systems equipped with various FPGAs, such as Xilinx ALVEO U200 and Intel Arria10 GX
・Logic circuit design CAD, circuit simulators, etc.
I expect students to spend their daytime hours in the lab, working closely with their peers to challenge and inspire one another. That said, other than of core times – such as seminars and research meetings – students are free to proceed their own research at their own pace.

Message or comments by the laboratory faculty staffs

Our laboratory is a new laboratory that will open in 2026. Let's work together to build this new laboratory from the ground up. Since there are no senior students yet, you will be the ones shaping the culture of this new lab. I hope it will become a fun and vibrant place.
Since my previous university had many working students, I warmly welcome working students as well.

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