



Dear Reader,

I have been teaching an undergraduate course on theory of algorithms for decades and once received a question from a student after a lecture on the dense hierarchy of the time complexity. The question was something like this: "You (myself) said that there are always problems in a narrow slot of time complexities, say between  $f(n)$  and  $f(n)\log n$  for any reasonable function  $f$ . We also know many interesting problems are in  $P$  and in  $NP$  that is probably exponential time. But  $P$  and  $NP$  are far apart, and there are many other time slots in between, any interesting problems there?" I was just scared, had  $n^{\log n}$  in my mind, but could not answer. In fact it turned out that there are very few natural problems having nontrivial upper bounds in there. Thus it was also an interesting mystery to me why most natural problems are splited into far-apart two ends,  $P$  and  $NP$ , and few of them in between. Is it because of our brain structure? For aliens in distant stars, do many problems natural to them have a time complexity of  $n^{\log n}$ ?

Thus it was a big news that  $GI$  can be solved in quasi-polynomial time. It seems to me  $GI$  is even more important than a bunch of  $NP$ -hard problems like Coloring, Hamilton Circuit and Set Cover combined all together. In this issue you can find an article by Anuj Dawar, reporting a Dagstuhl Seminar on the Graph Isomorphism Problem in the last December. Undoubtedly, Laci Babai is an obvious star who gave intense lectures on his new result.

There was also a sad news. Rusins



Freivalds passed away suddenly. He came to Kyoto quite a few times, most recently he stayed here for a couple of months several years ago. Rusins and I wrote a short paper on quantum algorithms; through enthusiastic discussions with him, I was deeply impressed by his talent and by his exceptionally nice gentlemanship. In Japan, we have (more than one) sayings that good persons are liable to misfortune. I of course believe his whole life was a great one, but it was a bit too short. We have two articles remembering him.

This issue is again a full spec of sections as always, including technical columns, conference reports, book introductions and technical submissions. Especially the Logic column in this issue is a bit special, as mentioned in the Luca's letter, providing thoughts and opinions on the "gap" between the US and Europe. An obvious gap also exists between the US and Asia. Fortunately in Japan, we were able to get a rather big government money recently and two theory projects, ELC and ERATO Kawarabayashi, are now running with clearly visible outputs.

Finally, I am thinking possible promotion of the technical contribution section. I know there are already many journals for that purpose, but there should be some role of our Bulletin that is not covered by those journals. Let me come back to this issue later after more thought and discussion with Luca.

*Kazuo Iwama, Kyoto  
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