

International Cooperative Research Activities in Era of Information Technology: A View from Personal Experiences

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Abstract

As everybody knows, good results can be obtained efficiently by cooperations of capable researchers. Recent information technologies enable us to carry out inter-regional and international cooperative researches in our offices without travelling to other regions or countries. This article points out that such cooperations should be more activated.

1. Introduction

Everybody knows that good results can be obtained efficiently by cooperations of capable researchers. However, the author feels that there have not been so many cooperative research programs carried out by colleagues from two or more institutions. We should activate such cooperations inter-regionally and internationally. This article points out from the author's experiences that researches by colleagues whose interests are not completely identical may be much more fruitful than those by colleagues of identical backgrounds in the same institution.

2. An Impressive Experience

In 1984, Prof. Jan C. Willems of the University of Groningen, The Netherlands, stayed at Osaka University as a JSPS (Japan Society for the Promotion of Science) Fellow, where the host professor was Prof. Hidenori Kimura (presently, he is with the University of Tokyo). At that time, the author was with Kobe University and interested mainly in decentralized control of large-scale interconnected systems. He attended Prof. Willems' lecture which was concerned with the almost disturbance decoupling problem, and found that the idea of almost disturbance decoupling may be applied to decentralized stabilization problems. A few days later, the author visited Prof. Willems at Osaka University and they discussed for one or two hours. They obtained a new result [1] immediately

and an extended one [2] later. The almost disturbance decoupling approach was used to stabilize a large-scale system by suppressing the effects of interconnections between subsystems.

From this experience, the author is convinced that cooperation of colleagues whose interests are not completely identical, is very effective for progress of researches. He has been trying to make such opportunities not only internationally but also in his country. In 1984, more than ten active researchers of ages between about 30 and 40 in Japan, including the author, got together after the IFAC World Congress held at Budapest, Hungary, to stimulate each other and activate cooperations in researches. Later, they formed a core of the control theory community in Japan, and made significant contributions to create new ideas of control theory and its applications. They were principal members of the operating committees for the International Symposium of Mathematical Theory of Networks and Systems, 1991 (MTNS-91) and the 35th IEEE Conference on Decision and Control (CDC '96) both held at Kobe, Japan.

3. Difficulty in Communication in '80s

The above example with Prof. Willems was the most efficient one. Such a case is not usual in '80s. The author invited Prof. Robert E. Skelton of Purdue University, USA (presently, he is with the University of California, San Diego, USA) to Kobe University for three weeks in 1986 as a JSPS Fellow. They discussed covariance control of linear continuous time systems. However, they could not finish writing a paper before Prof. Skelton left Kobe. Since it was difficult to communicate by airmails so often, it took two more years for them to obtain the final version [3].

The author has been working with Prof. D. D. Šiljak

of Santa Clara University, USA, for more than 20 years. When the author stayed at Santa Clara for one and a half years from 1978 to 1979, they could spend much time to discuss many subjects and did not need one month to obtain each result and write a paper. Their joint research was very productive and successful. However, after the author came back to Japan, it became very difficult to make progress in their joint research project because of inefficient communications by airmail. Although the author made a short visit to Santa Clara almost every year, it took more than five years for them to complete a certain paper [4] even in '90s.

4. Era of Information Technology

The recent information technology can solve the above communication problem. We can communicate with colleagues between distant institutions through the Internet. We can send and receive files of papers rapidly between coauthors, and exchange comments by email in almost real time. In this way, the information technology enables us to carry out inter-regional and international joint research projects efficiently. We are in such an era, and need to utilize the sophisticated technology.

The future development of the information technology may be beyond our prediction. Whether it may be beyond or not, it will change the concept of nations in a sense and the way of our research activities. The style of our cooperations in researches would be released from the constraint of the concept of nations in the very near future.

5. Concluding Remarks

Although the technological environment for inter-regional and international cooperations in researches has been sufficiently developed, the author would like to point out that we still need face-to-face discussions to understand each other personally and establish reliable human relations. Especially, to begin a cooperation, we need to meet first.

The author feels that inter-regional or international cooperations have not been encouraged enough in Asian countries. For this reason, he proposed ACPA (the Asian Control Professors' Association) to begin an activity for the promotion of exchange visits. The proposal was accepted at the ACPA Meeting held at the 38th IEEE CDC, Phoenix, Arizona, USA, in December, 1999 and the Exchange Program Committee has been established [5]. The author was appointed as the Chair of the committee. He is inviting volunteers who

would like to contribute to this activity as members of the committee.

References

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