

1 Introduction

Computational kinematics (CK) is a domain which is slowly spreading in the mechanism community. We understand here under the term CK that branch of kinematics research involving intensive computation not only of the numerical type, but also of a symbolic or geometric nature. The TC on Computational Kinematics has now 15 members but will probably be expanded in the near future with at least a representative of South America.

2 Events of 2000-2001

Outside many communications between the TC members (mainly by e-mail) 2 main events must be mentioned:

- organization of the next Computational Kinematics conference in 2001
- brainstorming around the electronic journal *Electronic Journal of Computational Kinematics* (EJCK) created by the TC.

2.1 Computational Kinematics 2001

There are two main conferences in our community: ARK (Advances in Robot Kinematics) and CK (Computational Kinematics) which are held in alternance. The TC supports both conferences but has a leading role in CK. I have already mentioned in my 2000 report the problem that occur in the organization of CK 1997, which was finally canceled. The present TC has decided to reactivate CK and to benefit from the venue of the IEEE Robotics Conference in Seoul and from the proposal of F. Park from Seoul University to organize CK just prior to IEEE ICRA. Among the various reasons that justify the choice of Seoul was the fact that there is an active Asian community in our domain but which is mostly not aware of the IFTOMM activity. CK has been held a few days before the deadline for this report but we may expect that this conference will be a success as over 30 high quality papers have been submitted, some of them from researchers outside the usual community of CK. Furthermore the activity of the IFTOMM TC on CK will be extensively advertised during ICRA. Now a few quick comments on CK:

- this conference has been a success with high quality presentation and large discussion (sometime heated) among the participants either during the meeting itself or during the numerous social events.
- F. Park and his staff from Seoul University must be commended for the perfect organization
- 100% of the submitted papers have been presented by one author during CK. I suspect that this is quite remarkable for an IFTOMM conference

In agreement with IFTOMM policy CK will not be organized in 2003 as the World Congress will be held this year but we have already received a proposal to organize CK in 2005. The Committee has hence examined the proposal of Pr. Ceccarelli to organize CK in Cassino. Pr. Ceccarelli has distributed beforehand a paper describing the proposal and has presented it before the Committee. Then a discussion has taken place among the Committee members minus Pr. Ceccarelli that was being asked to wait for the decision of the Committee. The final decision was that this proposal is accepted by the TC.

2.2 Electronic Journal of Computational Kinematics

During 1998 a large discussion takes place among the members of the TC and in the community at large about the opportunity to propose an electronic journal on Computational Kinematics. This idea was proposed by the Chairman as one of the main objectives of the TC. Although it is quite innovative in MMT, such type of journal is nowadays quite accepted in other communities (for example in astronomy or artificial intelligence) where electronic journals are now completely accepted as reference journals.

Creating an electronic journal was motivated by three main reasons:

- the time gap between the submission of a paper and its publication in classical journals (although the IFTOMM journal has a pretty good record in this field)
- the increase in the subscription prices of journals that may lead libraries to cancel subscriptions that are not deemed essential
- the fact that the computer is a natural media for computational kinematics offering large possibilities like animation, software exchanges and fair comparison between algorithms

The official EJCK web site¹ was opened in February 1999.

It was decided that the papers of the first issue will be mostly written by the members of the TC in order to establish immediately that EJCK was really a high quality journal. Unfortunately only 5 members of the TC were able to

¹<http://www.inria.fr/saga/EJCK/ECJK.html>

provide a paper for EJCK. At the initiative from the Chairman of the TC a discussion was organized among the TC to analyze the reasons of this failure. The following items were addressed during this discussion:

1. was the CK community too small to have its own journal ?
2. should be enlarge the topics of EJCK ?
3. was the mechanical engineering community not ready to accept an electronic journal ?
4. what measures should be taken to really start EJCK ?

For point 1 the members of the TC believe that the problems treated in CK are relevant to a large number of applications (in robotics but also for CAD systems for example) but that this approach is not well known outside a small community: hence it is necessary to advertise our approach. As for point 2 most members believe that we must strongly focus EJCK on kinematics first to ensure that any paper submitted to EJCK may be reviewed by at least 3 members of the board and then to avoid that EJCK become an "all-topics" journal with issues that may not be relevant to kinematics.

On point 3 we have already mentioned that electronic journals are completely accepted in some scientific communities like chemistry or artificial intelligence for which computers are a necessary tool. Clearly the mechanical engineering community is less ready to accept the introduction of computers but we believe that on the long term this media will be accepted and that EJCK is a "push" in the right direction.

As for the last point we have decided that the first issue of EJCK will consist in selected papers from the CK 2001 conference. For 2002 a similar procedure will be repeated with the medical robotics. We believe that as soon as a sufficient number of high quality papers will have been published in EJCK more and more papers will be submitted. conference MS4CMS02.

2.3 Meeting of the TC

The next meeting of the TC has been held in Seoul during the CK 2001 Conference. The main subjects of this meeting has been CK and EJCK, a discussion around the theme "Knowledge and Information on the Web".

The Chairman of the TC has indicated to the members that he has asked to the Executive Council a renewal of his chairmanship for the new term. The members have then proposed to discuss this proposal among them outside the presence of the Chairman. The result of this discussion is that the TC fully support the Chairman for this renewal.

A current practice in this TC is to renew the TC members on a regular basis. Some TC members have asked to be removed from the TC while some other have been not active. Pending the answer of these members the TC is proposing

that Pr. Bruyninckx, Hiller and Tadokoro will be no more members of this TC and propose to the Executive Council the nomination of the following members:

- Pr. Chen (Singapore)
- Pr. Mendez Carvallo (Brazil)
- Pr. Mata (Spain)
- Pr. Parkin (Australia)
- Pr. Shim (Korea)

As it may be seen this is a large expansion of the TC at the same time in number and locations. We are especially satisfied that the Asia-Oceania continent is now well represented in the TC.

The final topic of this meeting was the translation of historical papers that are fundamental in our domain but that are mostly available only in their original language (especially French and German). On a voluntary basis the members have agreed to work jointly on these translations according to the following scheme:

- exact translation of the original document
- translation of the underlying mathematical and kinematics background into the current modern mathematical language

The idea is to spread as much as possible such translation among the scientific community.