McGill
Centre for
Intelligent Machines

Volume 7, Number 4, October 1993

Newsletter

Network of Centres of Excellence Program

As reported in our summer issue, the Network of Centres of Excellence Program will be renewed for another four years and CIM researchers lead 9 of the IRIS (Institute for Robotics and Intelligent Systems) projects. They are:

Dr. Renato De Mori	Speech and Signal Understanding
Dr. George Zames	Software Tools for H^{∞} and Robust Control in Robotics
Dr. Ian Hunter	Design, Fabrication and Application of Nano- and Micro-Robots and Medical Robots
Dr. LaeequeDaneshmend	Sensor-Based Robotic Control of Mechanical Fragmentation
Dr. John Hollerbach	Haptic Interfaces for Teleoperation and Virtual Environments
Dr. John Hollerbach	Task-Oriented Sensor-Based Manipulation
Dr. Frank Ferrie	Visual Modelling for CAD/CAM and Autonomous
Dr. Pierre Belanger	Control of Manipulators with Flexible Links and Joints
Dr. Martin Levine	Dynamic Reasoning, Navigation and Sensing for Mobile Robots

We should get feedback by January, 1994.

Federal Elections Day

Monday, October 25, 1993 is Federal election day. The Center will close at 4 PM to allow the staff sufficient time for voting. Don't forget to get out there and vote!

Conference News

It was the 1st of what will (hopefully) become an every 2 year event @ Dagstuhl Castle in the German Saarland. The buildings belong to a German University consortium of computer science & mathematics societies. It has been authentically and meticulously renovated & includes the facilities & cuisine of a 1st class hotel. All is heavily subsidized by the German Government.

About 35 papers were presented on "Computational Kinematics" & these have been published by Kluwer in book form. The conference cochairmen & editors are Jorge Angles, Peter Hommel & Peter Kovacs from TU-Berlin.

The majority of the conferees were not, surprisingly, German however Canada was tied for 2nd place with France (it's close) with 5 participants. Of the 5, four were McGill-CIMites:- Jorge Angeles, Manfred Husty, Paul & John Lloyd.

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Although I'm prejudiced, I think Manfred's paper, "On some problems concerning equidistance from lines", sort of stole the show because not withstanding the forbidding title, it contained some quite new & simple insights into the nature of motions peculiar to some overconstrained mechanisms, i.e., ones that move, like the bumblebee flys, but theoretically should not.

Plans to launch a new journal to emphasize computational kinematics were made and, during a workshop session, participants tried to identify the most important unsolved problems in the field.

All was not work. A 1/2 day trip to Trier revealed some of the neatest late Roman-until-Renaissance architecture, beautifully restored.

Submitted by Paul Zsombor-Murray

FCAR Site Visit

The FCAR site visit of CIM will take place on Wednesday, November 24, 1993. We will have an information meeting for all CIM graduate students on Monday, November 22. Further details will follow at a later date...

Workshop On Redundant Robot Design

Organizers: J. Angeles, R.V. Patel

Last October, a workshop on robot design was held here at CIM. The aim of the workshop was to review the design history of our two redundant manipulators namely, the C3-Arm and REDIESTRO. The former was funded by an IRIS project, and the latter by an NSERC Strategic grant.

In last year's workshop, the speakers involved in different aspects of the design of the manipulators described their contributions to the projects. The issues covered in detail were the design methodology, redundancy and kinematic isotropy as the primary design criteria, preliminary and detailed mechanical design, and manufacturing and assembly. Furthermore, the solutions proposed for the problems of interfacing and control, and redundancy resolution were outlined.

Since then, the assembly of the prototypes and implementations of a preliminary decentralized PID rate/position control scheme have been completed. We are now able to implement the redundancy resolution schemes proposed last year, and thus complete the milestones of the aforementioned robot design projects. In order to review the evolution of these projects and demonstrate their current status, we have planned a second workshop on redundant robot design to be held on Friday, October 29, 1993. Detailed review of the following issues will be discussed by several people as follows:

Design Philosophy: J. Angeles
Kinematic and Mechanical Design: F. Ranjbaran
Redundancy Resolution Schemes: R. Patel
Obstacle Avoidance Strategies: F. Shadpey
Interfacing and Control: K. Shafik
Lab Demonstration: K. Shafik

Invitees to the workshop include engineers from CAE Electronics, Spar Aerospace, Bombardier Inc., International Submarine Engineering (ISE), Dynacon Enterprises Ltd., Societede Robotique et de Control inc.

The lab demonstration will highlight the ability of the robot to use its redundant joint architecture to follow the required Cartesian workspace trajectory.

Submitted by Farzam Ranjbaran and Paul Dobrovolny.

Facilities Update

We are pleased to announce the renovations to the machine room and the autonomous mobile robotics lab (rooms 414 & 416) are complete and the lab is operational. The renovations to room 435 have also been completed and the room has been divided into a public workstation area (rm 435) and student office space (rm 436). Thanks to everyone for their patience!

Let's see, what should we tackle next....

EEGSS Information.

The present is to inform all CIM electrical engineering students that the CIM representative for the Electrical Eng. Graduate Student Society is Marc Bolduc. We (EEGSS) are looking into getting a

rep. for 2020 university, but for the time being, I'll have the responsibility of also informing 2020 students.

Through this section of future newsletters I will brief you about issues relevant to CIM discussed at council, and about upcoming events. If you have any questions related to EEGSS, please contact me (email: bolduc@cim). An EEGSS newsletter should be out soon after our next council meeting being held on October 20th. Copies will be available in your 6th floor mailboxes, and by the CIM mail slots.

Lastly, last year's electrical engineering grad student squash ladder has restarted. If anyone is interested in joining, send me your e-mail address and a phone number where you can be reached, and I will forward all the necessary information to you. All levels welcome!

Submitted by Marc Bolduc

Hats Off To... ☞

- Pierre Breton & Daniel Rey for the outstanding job they did cleaning the fridge in the lounge. Have you noticed how many more people are now using this fridge???

- Farzam Ranjbaran for taking on the onerous task of regularly bringing the recycling bins from the lounge to the main lobby, thus making the lounge a lot more pleasant. By the way, he could use a hand....

- Nadim El-Fata (zick) for letting us know that we could all use some exercise and encouraging us by forming a volleyball team. How many of you are brave enough to try??

- Michael Glaum for reorganizing the photoboard with Kathleen. All we need now are more 'inspiring' pictures.

- To everyone who so kindly and quickly and efficiently helped us to clear out Rm 468 in record time.

- and finally to all the faculty, staff and students who took time off from their precious schedules to encourage Kathleen's efforts at the onerous task of rearranging the CIM Directory Board with your remarkable sense of humour....we'll have to do it again someday....

OOPS...We Goofed!

The September issue of the newsletter contained some incorrect e-mail addresses. Please note the following corrections:

Dr. David Jones	djones@cim.mcgill.ca
Dr. Martin Buehler	buehler@cim.mcgill.ca
Dr. Laeeque Daneshmend	laeeque@cim.mcgill.ca
Dr. James Owen	james@cim.mcgill.ca
Carlos Perez	carlosp@cim.mcgill.ca

Sorry for any inconvenience we may have caused!

Centre for Intelligent Machines Guidelines for Use of the Computing Facilities

1. General Principle
Unlike many other places, our community is a very open minded one where not many restrictions are imposed. We think of CIMites as very responsible people who always have a valid reason to stretch our computing facilities to its limits without being unethical, irresponsible, or contrary to the interests of the rest of our community. Help us to keep it that way.

2. Scope
Computing facilities are those operated by or for the benefit of CIM and provided for authorized use by local and remote users.

3. Application
All users shall adhere to both the letter and spirit of these guidelines provided to assure a working computing environment which is secure for all users.

System administrators (persons having 'root' permission may occasionally have to stray from the

letter of these guidelines, but may *never* violate its spirit. If in doubt, they shall seek consultation.

4. Guidelines
If you have a CIM computer account, you are responsible for the use of that account. You should set a password which will protect you from unauthorized use, and which will not be guessed easily. Moreover, you are not to make this password available to others.

Do not attempt to interfere with the work of other system users. Sending unsolicited messages to other user's screens or engaging in activities that prevent them from accomplishing their work is unacceptable. You should not prevent others from using shared resources by running unattended processes or locking a workstation.

Avoid tying up computing resources for excessive game playing or other trivial applications; sending excessive mail or messages locally or over the network; printing excessive copies of documents, files, or data. Refrain from using unwarranted or excessive amounts of storage; printing documents or files numerous times because you have not checked thoroughly for all errors and corrections; or running grossly inefficient programs when efficient ones are available. Be sensitive to special software/hardware services in only one location, and cede place to those whose work requires the special items.

Be sensitive to the public nature of shared facilities, and take care not to display on the screen in such locations images, sounds, or messages which would create an atmosphere of discomfort or harrassment for others.

Do not attempt to decrypt or translate encrypted material, or obtain system privileges you are not entitled. Attempts to do any of these will be considered serious transgressions.

Do not attempt to subvert the security of any computing facility. If you encounter or observe a gap in the system security, inform the systems staff.

Do not intentionally seek information about, browse, obtain copies of, or modify files, passwords, or tapes belonging to other people whether at CIM or elsewhere, unless specifically authorized to do so by those individuals. If an individual has explicitly and intentionally established a public server or clearly designed a set of files as being for shared use, others may assume authorization.

You must not create and send, or forward electronic chain letters.

Do not attempt to modify or remove computer equipment, software or peripherals without proper authorization.

You should be aware that McGill has laws that govern the use of computers and telecommunications. Members of the University community are expected to respect these laws.

5. Right of Free Speech
You may disagree with any or all CIM guidelines for use of computer resources, either publically or privately. However, you may not violate them for any reason or cause. If any of these guidelines has provisions you dislike, please notify the computer committee or system manager describing your concerns and/or suggestions.

6. Implied Agreement to Comply
You implicitly acknowledge, by continued system use, your agreement to comply with CIM guidelines governing the use of this system. Abuses of CIM computer resources will be handled by the CIM computer committee.

7. Administration
These guidelines are endorsed by the CIM's director and the CIM's Computer Committee and may be modified only by formal change, followed by adequate public notice to all CIM users.

Submitted by Carlos Perez

News and Congratulations ☆☆☆☆☆

- Pierre Tremblay, a valued CIM staff member and demo person, is leaving the Centre the end of October to pursue a new career at CAE. Thanks for everything, Pierre and best of luck.
- Francois Gauthier who was blessed with a third child, a baby girl named Clara.
- Eric Martin who also has a new bundle of joy, a baby boy named Charles.
- Belated congrats to John Darcovich who left the centre the end of the summer for a new challenge at CAE.
- Kim Wheeler who has recently married. Kim is working in San Diego.
- Margaret Dalziel is doing well in Belgium. Margaret is completing her MBA in Brussels and enjoying every minute of it!

THE CIM TOP TEN LIST

Top Ten rejected names for our department:

10. We Folk up on the 4th Floor

9. AdHOCC (Advanced House Of Crashes & Collisions)

8. MIT (McGill Institute of Technology - hey, if it works for them, it can work for us)

7. EMANON (NO NAME, spelled backwards)

6. MIMIC (McGill Intelligent Machines InCognito)

5. DRUIDS (Demos R Us, InDeed Sir)

4. CIDOS (Centre for the Investigation of Decreasing Office Space)

3. IMACS (Intelligent Machines Are Crazy Sometimes)

2. Scholastic Park

1. LATEX USERS GROUP (Leading Attempts To EXamine Uncertain Solutions Especially Regarding Superbly Graceful Robots Of Ubiquitous Phenomenon)

Submitted by Paul Mackenzie

Sysadmin's nigthmares

The other night I dreamed I was falling down, in a very deep precipice, and when going down, I was picturing of how painful it will be to hit the bottom and how little will remain of myself. After realizing that at this point there wasn't really any way out, I was trying to be mentally prepared for the big crash (rather splash), when all of a sudden everything stayed still! No more falling. I concluded, I had died of panic before hitting the rocky floor, I was glad I had never been a stoic soul, at least once in my life ,it did spare me the pain. I was happily waiting for the next step, but things remained frozen. I kept waiting and waiting and the next step never came, after a while, I panic! I realized I had become a stable system (as people paranoid about modelling things would say) where nothing happened, nothing changed, nothing moved!. I woke up in a cold sweat not knowing what to blame for my nightmare: the vegetarian pizza with Italian sausages I had last night (after the last power transfer) or all those users who keep telling me that for a very long time the systems have been stable.

And while talking about change, we have a few things on the menu. We have upgraded Emacs. The new version is already being used by our always courageous cyber-frontiersmen. According to them, this is the land of plenty. We believe them, therefore we will be rushing everybody else into Emacs-19. The move, obviously, will cause some 'collateral' damage that we will try to minimize. The bad news is that your '.emacs' file will be completely useless; the good news is that Peter Whaite has produced a new '.emacs' that will

allow you for more modes than you ever thought of. For more details, please read news or ask systems people. We have also replaced two of our printers, the QMS and LW4 for the HP LJ1 and new LW4. The two new printers have network interfaces and higher resolutions (we are thinking of slowing them down because few users have complained they never see their jobs in the printing queue!). We are also phasing out Mouse's print protocol, from now on, we start using the most standard protocol in the Unix world: lpr/lpd. We are also re-starting accounting on printed pages. We are wasting a lot of paper. We should not assume it is an endless resource.

On the Appletalk scene, we are reorganizing our zones. We would like to consolidate all Appletalk devices into a unique zone: CIM, where Phase 2 devices can happily co-exist with Phase-1 devices. For file and printing service we are standardizing on 'netatalk' and dropping 'cap' for good. We are also pushing Xylogics so that our terminal server supports Appletalk on the next software upgrade. This way connections to our Appletalk from home could be done using pure Appletalk protocols (we are doing that already but on few dedicated lines).

On the software scene, we finally signed a campus wide agreement with Silicon Graphics for software Maintance. All our SGI machines will be licensed to use the OS and a set of applications SGI call the 'core software'. Among these is C++. For more details, drop me a line.

And before I go, 4.4 BSD is out and Sparc1 and Sparc2 are among the supported hardware platforms, too bad it is the last one that will come from Berkeley. Another legend that has come to an end. It seems that things keep moving faster, and faster ... Hey! wait...where are you guys taking my desk!

Submitted by Carlos Perez

Note from the editor: Please send newsletter submissions to e-mail: **jmb@cim.mcgill.ca** <Janet>. *All contributions are welcome!*