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McGill

Centre for

Intelligent Machines

Newsletter

CIM Seminars

Finding that perfect job ...

Registration is now in progress for the second seminar in the series for CIM students. It will be held on January 23 in Room 437 from 2:00 - 3:30. The subject will be **Job Search Techniques**. This will be followed on March 7 with a seminar on Interview Skills. Please e-mail <jmb@cim> for more details and to register.

New Mobile Robot has Arrived!

For those of you who haven't heard, the Mobile Robotics Group has purchased a brand-spanking new Nomad 200 mobile robot from Nomadic Technologies Inc. in California. This tall, dark and intimidating beast has been christened *InVader* and will be helping out in research for the ISDE-5 (IRIS II) grant, which is looking into an artifical intelligent approach to autonomous mobile robot navigation and exploration. It contains a 486DX2 computer and comes equipped with sonar, infrared, magnetic field and tactile-collision sensors, and is in effect a workstation on wheels. If you haven't seen it, feel free to drop by Room 416 and take a look. *InVader* is not running at 100% quite yet, as there are quite a few hardware and software issues to sort out. Not to worry though; it is all in the capable hands of **Chief Engineer Marc Bolduc**. So, don't be surprised if you soon see a large cylindrical object wandering around CIM halls taking pictures and talking to itself. No, it's not an American tourist, it's *InVader*.

A Trek in the Far–East

If you are wondering if there is life after your thesis, here is what one fellow CIMite has to offer:

First note that this was our honeymoon, yes a delayed honeymoon. I wanted to finish my thesis first (which I did). So we felt that it was not unreasonable to leave for 6 weeks.

Karima and I flew over the Pacific to South Korea where we spent one week. We visited Seoul, a friend in Teajon (an ex-McGill student who returned to his home land after his Ph.D.), Kyongyu and two national parks. From there we flew to Thailand where for five beautiful days we visited the beautiful temples of Bangkok and the ruins of Ayuthaya.

The major part of our trip (four weeks) consisted of travelling through Vietnam. We started our visit in Hanoi; then we spent a week in the Halong Bay (if have you seen the film *Indochine*, it's where the two lovers sail away in one of most picturesque landscapes of the planet). After this rest in paradise, we started our journey from the north to the south with a stopover in the imperial city of Hue, where we cycled for five days going from site to site. The Mountain resort town of Dalat gave us the opportunity to enjoy some fresh air (15 degrees) while looking at Vietnamese tourists wearing their winter coats. Ho Chi Minh city (aka Saigon) was waiting for us around the corner with its cool humid winter temperature of 35 degrees. There we visited Montreal friends who are presently working in Viet Nam and then headed on a rented motorcycle

(90cc) for the Mekong delta (see photo attached) On our last day we made a trip into the past; a visit to Cu Chi where during the Viet Nam War, an endless network of tunnels traumatized the American militaries.

Beautiful orchids and butterflies are encountered throughout Thailand and Vietnam; and beautiful temples and palaces, everywhere in Asia...In short it was a memorable trip.

Submitted by Pierre Breton

Three Cheers for the Team!

Congratulations to everyone for an exceedingly fine performance at CIM's holiday party!

"The critics raved.... The audience roared.... Brilliant! A Tour de Force...." -- Joe Cim

Every one of you did a super job; in retrospect, it's amazing how much we accomplished in such little time. Many thanks and accolades to **Paul** for his hilarious and clever lyrics. A big hand goes to everyone for singing and sounding great -- special mention goes to **Andres, Marc, Jonas, Farzam** and **Don**. Acting was uniformly excellent! Marc and Farzam were perfect in their roles; Jonas was a scream as Loki and wonderful as a Robobriefs rep; Paul was simply brilliant as "Biff"; Don, a genius as the demonstrator -- and, of course, as St. Nick himself! (But don't get *too* carried away complimenting those young girls, mister...)

Great job, guys! Next year, Broadway?

Daniel Rey was the lucky winner of an Instant Thesis Kit and **Gilbert Soucy** got a taste of virtual reality when he won the Virtual Caribbean Vacation !

*Submitted by **Anna Lin*** (who incidentally was responsible for both writing and directing The CIM Revue and whose lovely voice led us to stardom !!)

EEGSS Fiesta Night

Free Food!! Door Prizes!! All Students Welcome!
First 25 in get a free drink!

When: Saturday, January 14, 9:00 PM
Where: Thomson House, 3650 McTavish
Admission: $2 in advance, $3 at the door

Contact Don Bui at <bui@cim> or local 8282

NEWS AND EVENTS

Hats off to:

☞**Majid Noorhosseini** who successfully defended his Ph.D. thesis entitled *A New Approach to the Automatic Robot Action Planning Problem*. Majid will be around as a Post Doc at Concordia for a while to complete and extend a robot workcell task planning package that he has developed. But he will eventually go back home and start his work as an assistant prof. at Amir-Kabir University of Technology,Tehran, Iran (in September 95).

His research, under the supervision of Prof. A.S. Malowany, involved the development of a robot planning system which was capable of generating assembly plans for many types of assembly operations. He is now building a 3D robot workcell simulator and applying his planning algorithms to generate assembly plans and execute them in the simulation world. If everything goes well then he will apply the planner to the real robot assembly and use the 3D simulator to control the workcell.

☞**Marc Bolduc,** who submitted his Masters thesis entitled *A Foveated Sensor for Robotic Vision*, at the end of November under the supervision of Prof. M.D. Levine, and which has been accepted without correction!! He will be doing the final deposition this week (if all goes well) and will be graduating in Feb. Marc will be remaining here to continue his work as Chief Engineer of the new InVader Robot for the IRIS 5 project.

☞On December 16, 1994, **John Lloyd** defended a Ph.D. thesis that deals a severe blow to the well known "singularity problem" in robotics (which manifests itself to naive robot users in the form of unpleasant messages such as "Solution Error", "Velocity Limit Exceeded", "Servo Tracking Error", or less polite mentions). It turns out that by using fractional power series, it is possible for piecewise analytic paths to be smoothly reparameterized in the neighbourhood of singularities. This is then used to construct trajectory timings that allow the desired path to be followed exactly, subject to constraints on the robot's joint velocities and accelerations. The thesis presents an exact theoretical algorithm for doing this, called OAT (Optimal Admissible Timing, not to be confused with the cereal which the candidate used to eat for breakfast). A more practical algorithm is also presented, called DAO (Discrete Approximate OAT; the candidate prefered the name Discrete OAT Approximation but was talked out of it). John's name was put on the Dean's Honor List. He intends to pursue Post Doc work, at a location to be anounced real soon now. Congratulations John !

☞On November 29, 1994, **Andre Foisy** defended a Ph.D. thesis on *Robust Collision Detection*. In a nutshell, the thesis argues that there exist practical ways to carry out geometrical calculations with a digital computer (in this case finding whether a solid in motion.will intersect another one anywhere along its path in three dimensions) which are insensitive to numerical errors. This is achieved by using projective geometry instead of

standard Euclidian geometry, and interval analysis instead of ordinary algebra on reals. The results produced by these algorithms are always correct from a numerical view point and can approach the exact answer as closely as wanted (but this is no cure for the bug in the Pentium!). Dr. Foisy is an Associate Professor at l'Université du Québec à Trois Rivières.

Articles & ideas are welcome. Please send them by e-mail to the editor. Deadline for publication is the 7th of every month.

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Associate Editors: Paul Mackenzie
Kathleen VanderNoot

CIM TOP TEN

Top 10 things overheard during the Christmas Holidays...

⑩ "Hello, Mobile Robotics Lab... Yes, this is Gal... Nope, sorry, no partying for me; I have to finish my thesis."

⑨ "Some more champagne, Professor Soucy?"

⑧ "No, I couldn't possibly eat another bite... Well, okay, one more..."

⑦ "*hic* Hi there, I *hic* work for the *hic* Cenner for Intelly-junt *hic* Intel-ogent *hic* Eentel-ogint *hic* McGill."

⑥ "Hee-ya! Take that! (smash) And that! (crash) Now outta my way; I'M gonna buy those Power Ranger action figures!"

⑤ "Just think: we're on holiday and missing all those fun McGill power transfers."

④ (at Dorothy's house) "Ha ha ha hee hee ah-HA ha ha ho ho hee hee..."

③ "A present for me? Oh look, another glow-in-the-dark orange and pink tie. Uh, thanks, honey."

② "Best wishes for an environmentally conscious, socially responsible, low-stress, non-addictive, gender-neutral winter-solstice holiday, practiced with the most joyous traditions of the religious persuasion of your choice, but with no implication that you have a religious persuasion, and with respect for the religious persuasions of others or their choice not to practice a religion at all."

① "See ya next year!"

(N.B. item 2: quote from Mayor Gerry Furney of Port McNeill, B.C.)
Submitted by Paul Mackenzie

Politically Incorrect Thought of the Month:

Heaven is where the police are British, the cooks French, the mechanics German, the lovers Italian, and it is all organized by the Swiss.

Hell is where the cooks are British, the mechanics French, the police German, the lovers Swiss, and it is all organized by the Italians.

WHY ASK WHY

(an anonymous contribution from the /www public domain)

Why do you need a driver's license to buy liquor when you can't drink and drive?

Why isn't phonetic spelled the way it sounds?

Why are there interstate highways in Hawaii?

Why are there flotation devices under plane seats instead of parachutes?

Why are cigarettes sold in gas stations when smoking is prohibited there?

Do you need a silencer if you are going to shoot a mime?

Have you ever imagined a world with no hypothetical situations?

How does the guy who drives the snowplow get to work in the mornings?

If 7-11 is open 24 hours a day, 365 days a year, why are there locks on the doors?

If a cow laughed, would milk come out her nose?

If nothing ever sticks to TEFLON, how do they make TEFLON stick to the pan?

If you tied buttered toast to the back of a cat and dropped it from a height, what would happen?

If you're in a vehicle going the speed of light, what happens when you turn on the headlights?

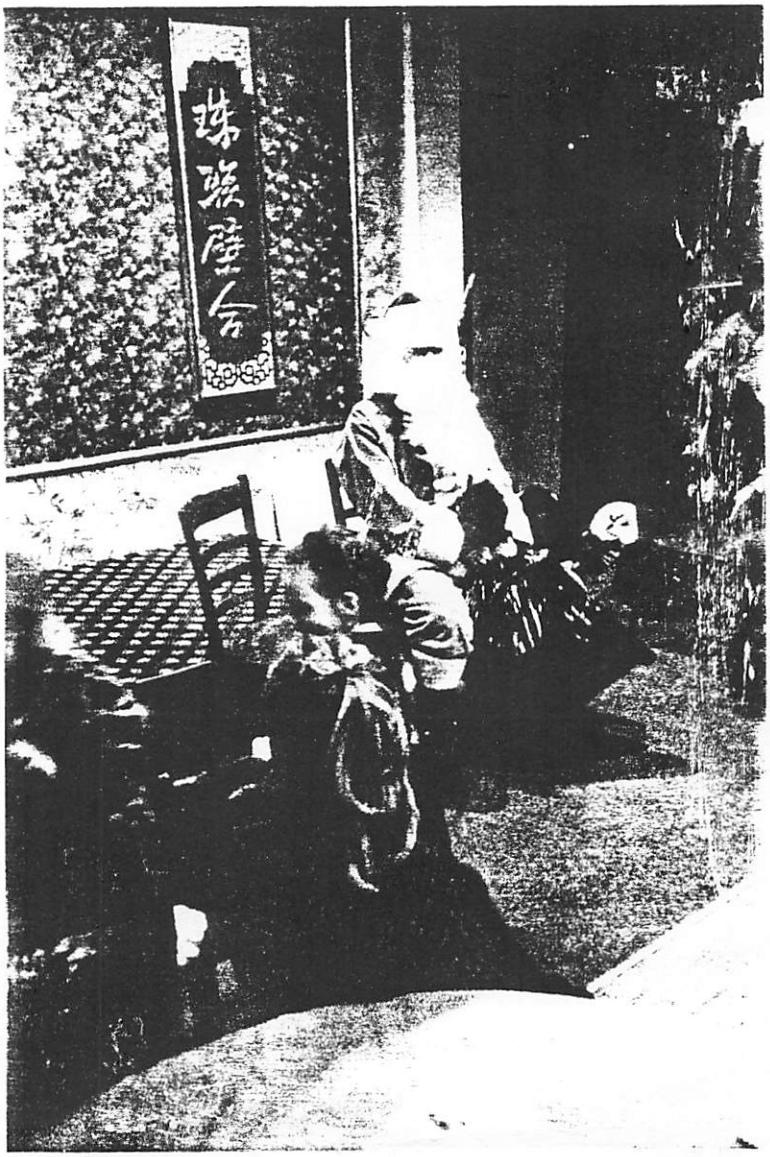
Why do they put Braille dots on the keypad of the drive-up automatic teller ?

Why do we drive on parkways and park on driveways?

Why is it that when you transport something by car, it's called a shipment, but when you transport something by ship, it's called cargo?

You know that little indestructible black box that is used on planes, why can't they make the whole plane out of the same substance?

Why is it that when you're driving and looking for an address, you turn down the volume on the radio?



Santa at CIM Holiday Party