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McGill

Centre for

Intelligent Machines

Newsletter

CHRISTMAS HOLIDAYS

The University will be closed from Friday, December 24th, 1993 to Monday, January 3rd, 1994 inclusive.

We'd like to take this opportunity to wish all our readers a very merry Christmas and all the best for 1994.

CAE ELECTRONICS VISIT

A group of students working with Prof. Jorge Angeles, together with Prof. Paul J. Zsombor-Murray, and Drs. Manfred Husty and Fengfeng Xi went on a half-day tour of CAE Electronics Ltd. in Ville St-Laurent on November 23rd. The tour was organized for researchers in the Robotic Mechanical Systems Group, and thus, a major portion of the visit was spent in and around CAE's motion systems, mainly flight and crew-training simulators. A fascinating blend of perception, cognition and action was definitely a highlight of the visit.

Apparently most of the real-life flight situations can be simulated for a flight trainee in the cockpit. This is made possible through the coupling of an extensive visual system with a powerful motion system, while the coupling link is a very robust and fast control system. The objective is to trick the perception of the trainee through the integration of the visual and motion systems, and consequently to examine his or her reactions.

To name a few, items such as good or bad landings, take-offs, air turbulance and vibrations induced by flight dymanics and even by the engines can be simulated (the latter requires bringing the 12 tons of structure into vibrations with frequencies of up to 25 Hz, all under control). We were allowed to sit in the cockpit behind the wheel of a stationary simulator and noticed how the visual cues alone can produce an illusive perception of motion, let alone the addition of the momentum changes that the trainee can feel through the motion system in a moving simulator.

No wonder these days a commercial pilot can be certified by training on simulators only, without ever flying the real aircraft even once. Not to worry, though, since perception, cognition and action are doing their job!

Submitted by Luc Baron and Farzam Ranjbaran

FCAR VISIT

Thank you to all the students, profs, and staff who helped out during the FCAR site visit held November 24, 1993.

The Centre was visited by a committee of five people. At the end of the visit, their feedback was positive. Now we must wait to find out what level of funding will be approved for our Centre.

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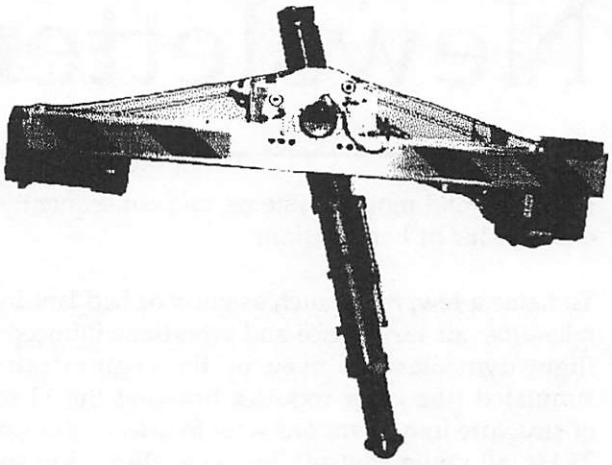
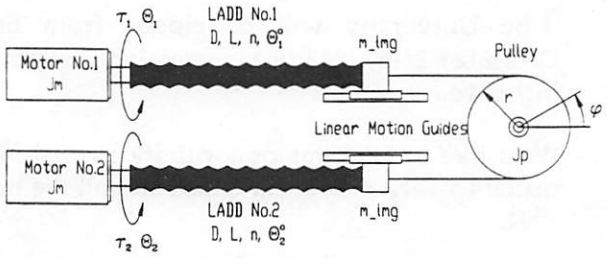


WHAT'S WITH ALL THE POUNDING?

Those among us lucky enough to have an office anywhere near room 411 have probably noticed what sounds like the rhythmic, pounding beat of dance music. Actually that's the sound of progress. Professor Martin Buehler heads up the Ambulatory Robotics Laboratory (ARL) here at CIM where legs are more than just a topic of conversation. His team has recently attracted attention (and complaints from the neighbors) over their successful implementation of an electrically actuated planar hopping robot. It may look like a pogo stick, but it's serious research in the field of dynamically stable legged locomotion and has resulted in two papers recently presented at robotics conferences in Japan along with a video of the machine achieving its top running speed of 1.2m/s.

The team is pleased with the success but is not content to sit on their laurels. A second generation robotic leg is currently being designed based on the AtLAS package also developed at ARL. The Antagonistic LADD Actuation Package is based on the LADD actuator developed over twenty years ago by Prof. Steve Jacobsen at the University of Utah. In its current incarnation, the AtLAS will actuate the knee and hip of the Compliant Articulated Robotic Leg (CARL) currently under development. Construction of the CARL prototype is scheduled to begin early in the new year. CARL is a big step towards the ultimate goal of ARL research efforts: a fully autonomous, electrically actuated quadruped.

The ARL team - Pedro Gregorio, Joey Mennitto and Mojtaba Ahmadi - welcomes you to stop by room 411 for a look at the machines or to suggest a name for the yet unchristened hopping robot.



Submitted by Pedro Gregorio

CIM TOP TEN

Top 10 things NOT to say during your thesis defence:

⑩ "You call THAT a question? How the hell did they make you a professor?"

⑨ "You laugh? You laugh? They laughed at Galileo; they laughed at Einstein..."

⑧ "Ladies and Gentlemen, please rise for the singing of a round of Bohemian Rhapsody..."

⑦ "Can you please keep your questions brief? Oprah is on TV in a few minutes and I don't want to miss her."

⑥ "...and then we attach it to the warp field core and enter hyperspace, enabling my algorithm to perform faster than the speed of light."

❺"Please phrase your question in the form of an answer."

❹"And now a word from our sponsor..."

❸ "I'm sorry Professor , I didn't say 'SIMON SAYS any questions?'. You're out."

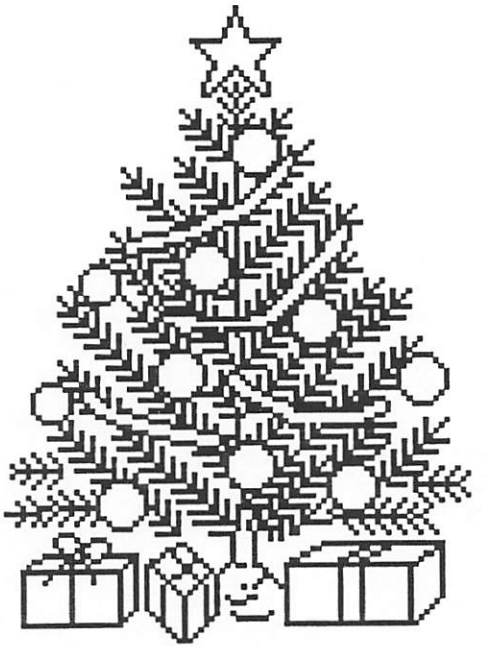
❷"And it would have worked if it weren't for those meddling kids..."

❶"Anybody else as drunk as I am?"

Submitted by Paul Mackenzie

HAPPY HANUKKAH

MERRY CHRISTMAS



HAPPY NEW YEAR!