



Computer graphics research helps “Ryan” come home with an Oscar



What happens when an artistic director meets a computer scientist?

An Oscar at the 77th annual Academy Awards, that's what.

Director Chris Landreth, who won the Best Animated Short for “Ryan” is not the only one glowing from the Oscar. A NSERC-funded computer sciences researcher is also getting credit, along with students and faculty at Seneca College's renowned Animation Arts Centre.

Karan Singh, Associate Professor of Computer Sciences at the University of Toronto is listed in the film's credits as Software R&D Director for the complex mathematical innovations that make parts of the film so realistic.



Photo taken from the production of “Ryan”. Copper Heart and the National Film Board of Canada. All Rights Reserved

Prof. Singh met Landreth in 1995 where they worked together at Alias, Canada's groundbreaking computer graphics animation company. The two collaborated on various projects over the years, with Landreth providing the artistic vision and Singh providing the technical know-how.

Landreth approached Singh with an unusual request — he wanted to make a film about Ryan Larkin, the National Film Board animation genius who eventually ended up on social assistance and panhandling in Montreal.

One of the major themes in Ryan was that people see the world in unique ways, dependent on their attitudes and life experiences. The character of Ryan, having been through drug addiction and alcohol abuse, offered a chance for Landreth to explore the different states of mind affected by Ryan's perception of the space around him.

To achieve this visually, Landreth wanted to manipulate hair growing from his characters' heads in such a way that they would be able to wrap around objects and move in a way that was believable.

Singh didn't hesitate and the two began their usual pattern of collaboration.

The project gained momentum and Toronto-based Copper Heart Entertainment and co-producer the National Film Board in association with Seneca College pulled together for the project.

Seneca College provided some of its top students and the college's Animation Arts Centre created a designated production suite equipped with eight high-powered workstations using the latest in 3D digital technology.

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**Second Annual
Ontario R&E Summit**
June 13-14, 2005

“Powering Ontario's Research Advantage”

See details inside!

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Stellar line-up of speakers for 2005 Ontario R&E Summit



A stellar line-up of 39 speakers, from CFI's new President and CEO Dr. Eliot Phillipson, to the brilliant experimental mathematician Dr. Jonathan Borwein, is expected to draw top researchers and scientists to Toronto June 13-14, for the Second Annual Ontario Research and Education (R&E) Summit.

This year's theme - "Powering Ontario's Research Advantage" - has a strong emphasis on commercialization as it looks at future directions in research, including trends in new technologies and leveraging research capacity to drive economic development and scientific discovery.

Presented by ORION and its partners, the Ontario R&E Summit brings together leaders in science, research, education and information technology from universities, colleges, teaching hospitals, government and industry.

This year, the Summit presents many of the country's most accomplished and exciting scientists and researchers, including keynotes and presentations from the Ontario Centres of Excellence, the National Research Council (NRC), the Ontario Council on University Research, Science and Engineering Research Canada (NSERC), Nortel Networks, the Canadian Institute for Health Research (CIHR), the Ontario Genomics Institute, SHARCNET, the Office of the National Science Advisor, CANARIE, MaRS, the Northern Ontario School of Medicine, and many more.

The first of the new ORION Awards, launched this year, will be also presented to Ontario's advanced networking pioneers.

Nortel Networks' VP of Advanced Technology Research Ryan Stark is scheduled to give the June 14 afternoon keynote.

Among the highlights is a plenary session featuring Dr. Jonathan Borwein, Canada Research Chair, Computer Sciences Faculty, Dalhousie

University. The WestGrid researcher has just teamed up with colleague Dr. David Bailey, Chief Technologist, Computational Research Dept. at Lawrence Berkeley National Laboratory, to publish a hot new book - "Mathematics by Experiment: Plausible Reasoning in the 21st Century", which has been gathering rave reviews in scientific and academic circles.

Other Summit highlights include a two-part session looking at research directions at Ontario's colleges and universities. Among the presentations are several applied research initiatives at a number of Ontario colleges, which are becoming more aggressive in positioning their growing capabilities within the broad research landscape.



Other sessions will focus on "Commercializing Discovery", "Applications and Innovations", "Grid and High Performance Computing", "Research in Support of Life Sciences" and "Connecting Research with Industry".

The summit wraps up with a Roundtable and 10-Year Outlook and key directions in research, with an all-star cast including Jack Smith, Director, Science and Technology Foresight, Office of the National Science Advisor; Dr. Art McDonald, Director, Sudbury Neutrino Laboratory, Queen's University; Dr. Pekka K. Sinervo, Dean, Experimental High Energy Physics, University of Toronto, and Dr. Nils Petersen, who recently left the University of Western Ontario to take over as Director General of Canada's new National Institute for Nanotechnology.

Take advantage of early bird registration prior to May 16, 2005 for \$255 and save \$40. The Summit is at the Courtyard Marriott Toronto Downtown at 475 Yonge Street. Attendees are urged to book their accommodations by May 13 in order to obtain a discount rate of \$149 with free high-speed Internet.

To register and download the Summit Program, visit www.orion.on.ca/events/ontariorandesummit.html

Ontario launches Youth Science and Technology Outreach program

Ontario's postsecondary institutions are encouraged to apply for funding under a new \$3 million Youth Science and Technology Outreach Program.

Announced by Economic Development and Trade Minister Joe Cordiano at the FIRST Robotics Greater Toronto Regional Competition at the Hershey Centre in Mississauga on April 1, the program is designed to foster innovation by connecting the next generation of researchers with today's leaders in science and technology.

The goal is to connect youth across the province, especially those in rural and underserved areas with publicly funded researchers.

It also aims to provide students with hands-on science and technology experiences that will help them gain an understanding of the research process and the connection between lab research and the science taught in the classroom.

It is expected that researchers will engage youth through speaking forums such as university open houses, evening lectures, regular youth and public lecture series, workshops and demonstration projects.

Short-term projects include industrial or field research sites, student science competitions, lab mentorships, expert-in-residence programs where researchers participate in classrooms or extra-curricular science camps, resource kits portraying research undertaken in labs, and educational programs reflecting current science and technology.

Ontario-based, non-profit organizations, including post secondary institutions, science awareness organizations, research institutions and industry or professional associations, are eligible to apply for funding. Projects can receive maximum funding of \$150,000 over three years.

The investment is part of the Ontario government's \$1.8 billion commitment over four years to support research and commercialization.

\$15 million available

Ontario institutions urged to apply for CANARIE funding



ORION is urging Ontario institutions to apply for up to \$15 million in funding available under the new CANARIE Intelligent Infrastructures Program (CIIP). CANARIE, Canada's advanced Internet development organization, hopes to encourage scientific and educational collaboration in the development of innovative optical network applications.

Funding is available to researchers and institutions involved in projects specifically utilizing User Controlled LightPaths (UCLP) and Service-Oriented Architecture (SOA) to fortify new applications in areas such as sensor and control networks and related commercial applications.

CANARIE views UCLP as part of a broad range of related infrastructure developments that we have called "Intelligent Infrastructure".

Funding for the current CIIP is \$15 million and CANARIE will support up to 75% of eligible costs. Projects are required to fund a minimum of 25 per cent of total costs from non-government sources. The maximum size of a contribution to a project in this competition is \$2 million.

"This a great opportunity to identify creative ideas and make the most of institution's connection to ORION and CA*net 4," said ORION President and CEO Phil Baker, who is calling on researchers at Ontario colleges and universities and other connected institution to consider projects that might be eligible.

ORION is prepared to assist research members and institutions in their projects by pulling potential proposal proponents together, identifying synergies, opportunities and partners, by offering other kinds of assistance.

Of special interest are strategies and applications that relate to such business models as supply chain management, or process control systems that can exploit the capabilities of broadband networks.

An example of a possible CIIP eligible projects might involve integrating and improving existing collaborative tools using web services to become the preferred collaborative environment for three geographically separated groups of artists or researchers to work more effectively; or possibly a sensor network project that uses web services to control a set of distributed remote sensors and links them to a distant database.

Another project example is developing a high quality audio and video wall using web services and workflow between three universities across CA*net 4 for music training; or a project to use web services security and workflow with micro-firewalls to enable control of a distributed instrument network for water quality management.

The CIIP deadline for submissions is May 2, 2005. For more information and proposal criteria, visit www.canarie.ca/funding/ciip/index.html

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Students from the Dynamic Graphics Project, an interdisciplinary research laboratory in the University of Toronto's computer science department were also enlisted in the project and wrote a number of scripts and plug-ins to achieve various effects and streamline production for the animators.

Singh and his team also developed a formula called a cord which gives physical properties to animated curves in order to make hair, string, wire and other rope-like objects behave intuitively.

A nonlinear projection system was developed that allows an animator to create multiple points of view and combine them in various ways to achieve a desired effect. Typically, hair and other passive rope-like objects are animated with physical simulations, but this approach is difficult to control when the animated object itself is moving.

Cords address this problem by allowing animators to keyframe animate curves that are restricted to behave like string or wire, with intuitive control properties such as stiffness and elasticity. In addition, cords are procedurally generated such that they appear to wrap around scene geometry. "Creating Ryan's hair was a big undertaking," Singh said, adding "it was done with the cord formula. The colourful strands of hair take on a life of their own."

Seneca College is particularly proud of its contribution to the Oscar-winning film. "With Chris mentoring, providing his expertise and inspiration, the Seneca students and graduates who worked on Ryan refined their animation technique and artistry to create the visual effect that makes Ryan so exceptional," says Jed DeCory, Chair, Seneca College School of Communication Arts and one of Ryan's Executive Producers.

"All of the 11 students who had a major part in the production of Ryan are now employed in the animation industry, and with this Oscar, the Animation Arts Centre at Seneca has truly become a major player in the training of the next generation of great animation filmmakers," he said.

Singh's project was partially funded by the Natural Sciences and Engineering Research Council of Canada (NSERC).

Scientists working at the MITACS (Mathematics of Information Technology and Complex Systems) - a Canadian Network of Centres of Excellence (NCE) for the mathematical sciences - are currently using the new software to look at other complex curves, such as DNA and curving molecules. It could also have applications in something like virtual surgery, where the thread would have to move in a realistic way.

Learn more about Prof. Singh's research at www.dgp.toronto.edu/~karan.

Photo Credit: Photo taken from the production. Copper Heart and the National Film Board of Canada. All Rights Reserved / www.nfb.ca





Cross-border research collaborations

ORION is working with its colleagues in New York and Michigan, as well as with CANARIE, to facilitate major collaborations among researchers and institutions in the region.

A first step for ORION is to identify Ontario researchers' networking, data-sharing and related requirements. The purpose is to ensure ORION and its colleague networks can support their current and planned collaborations. If aware of such initiatives, researchers are asked to communicate with ORION via e-mail to info@orano.on.ca.

Chairholders database online

The Natural Sciences and Engineering Research Council of Canada (NSERC) has posted a new research chairholders database. This comprehensive online resource is intended to connect users with some of Canada's leading scientists and engineers and includes a summary of their activities, partnering organizations and contact information. www.nserc.gc.ca/partners/chairs_e.asp

Levy new Ryerson president

Ryerson University, looking to expand its research and graduate programs has appointed the former president of Sheridan College as its new president. Sheldon Levy succeeds Dr. Claude Lajeunesse who steps down after 10 years.

Focus areas for Levy, who starts Aug. 1, will include expanding undergraduate and graduate programs; continuing the expansion of research activity; and increasing community, academic and industry partnerships. Levy, who became president of Sheridan College in 1997, joined the University of Toronto in 2001 as VP of government and institutional relations. He is currently VP of Finance and Strategy at the University of Ontario Institute of Technology.

Cyberinfrastructure news and blog

A new online publication is providing the science and research community with news and ideas surrounding cyberinfrastructure as the essential foundation for advanced scientific inquiry.

CyberInfrastructure Technology (CTWatch) presents current industry news, trends and topics important to the broad cyberinfrastructure

community. A "blog" also provides a forum to share news and participate in interactive discussion. www.ctwatch.org.

Video artist to lead OCAD

Accomplished artistic director and video artist Sara Diamond assumes the role of President of the Ontario College of Art and Design (OCAD) July 1, replacing Ron Shuebrook. With over 25 years of research and technology accomplishments, Diamond has been asked to help position OCAD as a world leader in graduate research and advanced education in art and design.

Currently Director of Research at Banff Centre and Artistic Director, Banff New Media Institute, she has worked extensively on research and development projects in software, consulted in developing interactive media curriculum and events.

Ontario Schools invited to Megaconference Jr.

Ontario school boards are invited to connect globally at the second annual Megaconference Jr. on May 19. The massive interactive videoconference gives K-12 students around the globe the opportunity to communicate, collaborate and contribute to each other's learning in real-time using advanced multi-point video conferencing technology. Several school boards from Ontario participated in the first annual Megaconference Jr. last spring. It's expected that several more will participate this year. Learn more at www.megaconferencejr.org.

Will Toronto win Intelligent Community of the Year?

Toronto, one of top seven global "intelligent communities" for 2005, is a strong contender to win the coveted Intelligent Community of the Year designation. The announcement will be made at the Intelligent Community Forum (ICF) annual conference in New York City, June 13-14, 2005. Glasgow was selected for the honours in 2004.

The award recognizes communities from around the world that possess a combination of a significant usage of broadband technology, a labour force able to perform knowledge work, programs that promote digital democracy, innovation, and marketing of community broadband that attracts new employers. Learn more or register at www.intelligentcommunity.org/html/TopSeven.html.

Networking2005 comes to Waterloo

The international IFIP Technical Committee on Communications Systems holds its fourth annual conference on Networking at the University of Waterloo, May 2-6, 2005. This

year's conference will focus on networking technologies, services and protocols, computer performance and communications networks, mobile and wireless communications systems.

It includes a peer reviewed program of technical sessions, tutorials, panels and workshops and is open to both students and industry professionals. Previous conferences were held in Athens, Pisa, and Paris. Visit www.cs.uwaterloo.ca/conferences/networking2005/

Seneca hosts OCCIT2005

Seneca College hosts the 2005 Conference for Ontario Community College Information Technology Staff (OCCIT2005) on June 1 and 2, bringing IT professionals from colleges throughout Ontario to share ideas, perspectives, best practices, strategies and innovative solutions. The OCCIT conference is offered to technical staff in roles that include support and management of academic and administrative systems, including infrastructure issues and solutions, management of technical systems, and academic institutional IT requirements. Learn more at www.senecac.on.ca/occit/program.html

Banff Centre hosts nextMEDIA Festival

Digital media producers are invited to nextMEDIA – the International Interactive Media Festival, a gathering of the world's leaders in interactive media and technology.

The June 10-12 event is at The Banff Centre, preceding the Banff World Television Festival. It is a unique opportunity for industry leaders to take part in panels, sessions and screenings focusing on business and creative processes – what drives content, government, learning and industry. nextMEDIA 2005 focuses on interactive business, research and content programming. It's a smart, savvy event staged as a retreat in the Rockies. www.nextmedia2005.com.

New ORION Marketing Officer

ORION is expanding its outreach efforts with a new Marketing Officer. Shari Balga, a graduate of Ryerson University with a strong background in marketing, will work with ORION's user community to increase awareness of the benefits of advanced networking.

She will also be responsible for the Ontario Research and Discovery News, provide assistance in public and media relations and coordinate events, including ORION Days, workshops and the annual Ontario R&E Summit.



Many looking to introduce new applications

User survey gives ORION top marks



ORION's user institutions, virtually unanimous in their positive reviews of the network's performance and reliability, are looking forward to introducing new and innovative applications over the network, according to ORION's first user survey.

Designed to solicit feedback from ORION's connected institutions, the survey asked representatives about a wide range of issues, from the quality of ORION's client services, to plans to introduce new applications over the network.

With his eye on the bottom line, one of the most important statistics to come out of the survey, according to ORION President/CEO Phil Baker, is that 98 per cent of users intend to maintain their connection to ORION over the next three years.

"That's a significant result and a strong vote of confidence in ORION," said Baker. "It all comes down to whether we're making a difference and these results show that we are."

While based on interim results of 52 of 65 connected institutions, the survey shows that half of the connected institutions expect to require additional services from ORION, such as VLANs and implementing multicast capabilities.

Although a handful of ORION's users already had access to significant bandwidth prior to ORION, 80 per cent of ORION's new users report that the network has brought a significant enhancement to their level of connectivity, allowing them to take greater advantage of advanced networking capabilities.

The results show that nearly 70 per cent of institutions are poised to introduce in the very near future a whole range of new and innovative applications over the network. These include advanced videoconferencing, gaining access to new digital library resources, collaborating with other institutions to implement shared data storage, and gaining access to distributed and high performance computing resources.

Among the school boards that responded, plans range from introducing new professional development opportunities for teachers, to offering virtual field trips and advanced interactivity in the classrooms.

Some 98 per cent gave ORION's Network Operations high ratings for their work and expertise. ORION's communications outreach and administrative services also got top marks.

Typical comments were very positive and speak to the institutions' intention to begin to leverage innovation and introduce new ways of supporting researchers, educators and learners.

"Further applications to share resources among institutions are certain to evolve over the next few years. Collaborative applications in particular are generating a lot of interest," said Robin Griffin, Associate Director, Enterprise Networks, University Technology Services, McMaster University.

"ORION has done an excellent job in community outreach and marketing, industry and government collaboration and promotion of partnership initiatives in networking, research and education.

ORION provides us with many exciting opportunities in education and research partnerships that are now possible through this advanced network. ORION is putting Ontario on the world map and we are proud to be part of the ORION community," said Lan Nguyen, VP of Innovation and Information Technology at Centennial College.

"Inter-institutional applications and services will grow dramatically over the next year. We are glad to be part of this new network," said Terence Verity, CIO of Seneca College

"We have been impressed with the operation and availability of the ORION network. ORANO has done an excellent job in working with the members to keep them informed of any problems related to network operations. Uptime has been great ..." said Ed Blasinski, Manager of Communication Services, ITS, Brock University.

Comments from the annual survey will assist ORION in planning for the future development

70% are poised to introduce new and innovative applications over the network

".... ORION provides us with many exciting opportunities in education and research partnerships ..."

"... Inter-institutional applications and services will grow dramatically over the next year ..."

ORION RESEARCH AND DISCOVERY NEWS

The ORION Research and Discovery News provides news and information of interest to users of the Ontario Research and Innovation Optical Network and to the worldwide research and education community. ORION is an advanced high-speed fibre optic network that connects research and education institutions to each other and to colleagues around the world. Spanning 4,200 kilometres to 21 cities throughout the Province of Ontario, ORION brings leading-edge network capability to the publicly funded R&E community and is a catalyst for creative and innovative next generation Internet applications. ORION is owned and operated by the Optical Regional Advanced Network of Ontario (ORANO). Visit our web site www.orion.on.ca or write the Editor at info@orion.on.ca Subscribe at www.orion.on.ca/newsletter/subscribe.html

