NCFRN

NCFRN is a unique Canadian initiative aimed at building autonomous field robotics platforms to tackle Canadian problems.

THE TEAM

• A network of 11 Canadian universities, 12 industrial and government partners
• 4 themes: Land, Air, Water and Human
• Scientific Director: Greg Dudek
• Budget: $10 Million total, i.e. $5M from the Federal Government and $5M from universities/partners

SCIENTIFIC & SOCIO-ECONOMIC GOALS

• Develop intelligent, autonomous, mobile robotic terrestrial, aerial and marine vehicles suitable for real Canadian environments
• Make our terrestrial, marine, aerial robots collaborate all together to achieve complex and/or dangerous tasks that cannot be performed by individual robots or humans
• Foster collaborations between academic, industrial and government researchers in Canada
• Keep Canada in a competitive position in field robotics internationally
• Transfer of expertise, technologies, and personnel between universities and our industry and government partners

THEMES

- LAND
- AIR
- MARINE
- HUMAN-ROBOT INTERACTION

CONTACT INFORMATION

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THEME: HUMAN-ROBOT INTERACTION

This theme is aimed at promoting research on human-robot interaction as it arises in the context of field robotics. A major focus of the activities is directed towards the development and validation of assistive robot platforms (smart wheelchairs, telepresence robots), due to the expertise of the team members. However through interactions with researchers in other themes, several research projects targeting broader human-robot interaction problems have been tackled.

GOALS

- To develop models and algorithms for effective interaction between robots and people.
- To build prototypes of technologies for multi-modal interaction with robots.
- To train highly-qualified personnel in the tools and methods of human-robot interaction.

SAMPLE PROJECTS

- Active visual search for effective place and object detection.
- Algorithms for autonomous navigation in environments shared by humans and robots.
- Human-machine collaborative/shared control of robots and semi-autonomous systems.
- Algorithms for autonomous person tracking and following.
- Multi-modal interaction protocols for robust human-robot communication in the field.
- Developing models to estimate human behavior.

APPLICATIONS

- Tele-presence robots.
- Assistive robots.
- Security, surveillance and inspection
- Self-driving vehicles under human control

RESEARCH TEAM

- Gregory Dudek, School of Computer Science, McGill University
- Joelle Pineau, School of Computer Science, McGill University
- John Tsotsos, York University
- Richard Vaughan, Simon Fraser University
- Hong Zhang, University of Alberta

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