

People

Faculty

Emeritus Faculty

Part-Time Lecturer

Staff

Faculty

Caroline G.L. Cao

Associate Professor, Department of Mechanical Engineering

Education

Ph.D., University of Toronto, 2002

Cert. Technology Management, Politecnico DiMilano & Helsinki University of Technology, 1999

M.Sc., Simon Fraser University, 1996

Post-Bacc. Dipl., Simon Fraser University, 1994

B.Sc., Simon Fraser University, 1990

Research Interests

Professor Cao's research focus is in human factors of medical systems, including the design and evaluation of enabling technology (e.g., robotics, image guidance, haptics, training simulators) for minimally invasive surgery, training of surgical skills in real and virtual simulators, and decision-making and team communication in the operating room. She has published over 90 peer-reviewed technical papers on her work, and two book chapters on the topic of human factors in robotic surgery.

Professor Cao is also an associate editor of the IEEE Transactions on Systems, Man, and Cybernetics, Part A: Systems and Humans, and of the Journal of Advances in Human-Computer Interaction. She served as a reviewer for Lawrence Erlbaum Associates Publishers, Taylor & Francis Group, ACM Transactions on Computer-Human Interaction, National Science Foundation, British Medical Journal (Quality and Safety in Health Care), and conference technical sessions for HFES and IEEE SMC. She is a former chair and program chair of the Health Care Technical Group of the Human Factors and Ergonomics Society.

Background

Caroline G. L. Cao received a Ph.D. (2002) in mechanical & industrial engineering from the University of Toronto. She is currently the director of the Human Factors Program in the School of Engineering at Tufts University; associate professor of mechanical engineering, and adjunct associate professor of biomedical engineering at Tufts University. She is the founding director of the Ergonomics in Remote Environments Laboratory at Tufts University, and research director of the Tufts-New England Medical Center & School of Engineering Human Factors and Surgical Research Center. Caroline Cao is a recipient of the prestigious National Science Foundation Career Award in the USA.

Distinctions

2003-2008 NSF CAREER Award, National Science Foundation

2001 Chapanis Best Student Paper Award, Finalist, Human Factors and Ergonomics Society

2000 Claudette MacKay-Lassonde Scholarship (Women in Engineering), University of Toronto Nominee, Canadian Engineering Memorial Foundation

1999-2001 Ontario Graduate Scholarship, University of Toronto

1997-1999 University of Toronto Graduate Fellowship

1997 Gordon Diewert Fellowship, SFU (declined)

1997 SFU Graduate Fellowship, SFU (declined)

1985-1988 Gordon M. Shrum Scholarship, SFU

1985 MacKenzie King Entrance Scholarship, UBC (declined)

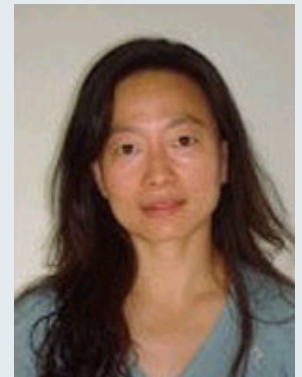
Selected Publications

Refereed Journals

Bell, A., Zhou, M., Schwaitzberg, S.D., Cao, C.G. L. (2009). Using a Dynamic Training Environment to Acquire Laparoscopic Surgery Skill. *Surgical Endoscopy*, 23(10), 2356-2363.

Cao, C.G.L., Weinger, M., Slagle, J., et al. (2008). Differences in Day and Night Shift Clinical Performance in Anesthesiology. *Human Factors*, 50(2), 276-290.

Zhou, M., Perreault, J., Schwaitzberg, S.D., Cao, C.G.L. (2008). Effect of experience on force perception threshold in minimally invasive surgery. *Surgical Endoscopy*, 22(2), 510-515.



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O'Connor, A., Schwaizberg, S.D., Cao, C.G.L. (2007). How much feedback is necessary for learning to suture? *Surgical Endoscopy*, 22, 1614-1619.

Bell, A., Johanas, J., Saide, M., Cao, C.G.L., Schwaizberg, S.D. (2007). DynaMITE: Dynamic minimally invasive training and testing environment. *Journal of Surgical Innovation*, 14(3), 217-224.

Shimotsu, R. & Cao, C.G.L. (2007). The effect of color-contrasting shadows on a dynamic 3D laparoscopic surgical task. *IEEE Transactions on Systems, Man, and Cybernetics, Part A: Systems and Humans*, 37(6), 1047-1053.

Cao, C.G.L. & Milgram, P. (2007). Direction and location are not sufficient for navigating in non-rigid environments - an empirical study in augmented reality. *Presence: Teleoperators and Virtual Environments*, 16(6), 584-602.

Webster, J. & Cao, C.G.L. (2006). Lowering communication barriers in operating room technology. *Human Factors*, 48(4), 747-758.

Perreault, J. & Cao, C.G.L. (2006). Effects of vision and friction on haptic perception. *Human Factors*, 48(3), 574-586.

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