



### Select Publications

Zheng X, Zheng B, Bednarik R, Atkins MS. *Pupil Responses to Continuous Aiming Movements*. International Journal of Human - Computer Studies. November 2015 83:1-11

Bogdanova R, Boulanger P, Zheng B. *Three-Dimensional Eye Tracking in a Surgical Scenario*. Surg Innov. 2015 Feb 23.

Zheng B, Jiang X, Atkins MS. *Detection of Changes in Surgical Difficulty: Evidence From Pupil Responses*. Surgical innovation 2015.

Jiang XT, Zheng B, Atkins MS, (2014) *Video Processing to Locate the Tooltip Position in Surgical Eye-Hand Coordination Asks*. Surgical Innovation, 2014 July 21.

### [Bin Zheng, MD, PhD](#)

- Director, Surgical Simulation Research Lab (SSRL), Faculty of Medicine & Dentistry, Department of Surgery, University of Alberta
- Research Affiliate, Glenrose Rehabilitation Hospital

Differing from most medical researchers focusing on patients and their health problems, Dr. Bin Zheng puts surgeons under the spotlight. Explicitly, Dr. Zheng is a “human factors scientist” with a special interest in understanding surgeons’ performance in the operating room. By identifying and removing harmful factors that cause stress to surgeons and implementing safe measures and training programs, Dr. Zheng aims to improve the work efficiency of surgeons in the team setting.

Since more advanced technologies are introduced to the operating theatre, surgeons face new challenges in maintaining their confidence under image-guided and remote-controlled environments. Equipped with eye-tracking and 3D motion tracking systems, Dr. Zheng studies the eye-hand coordination, spatial orientation and the skills acquisition process of surgeons in imaged guided surgeries, including laparoscopic, endoscopic and robotic surgery. Dr. Zheng’s research aims to shorten the learning curve of surgeons using simulation and strengthen their competence in performing imaged-guided surgeries.

Currently, Dr. Zheng is the *Endowed Research Chair in Surgical Simulation* in the Department of Surgery at the University of Alberta. He collaborates with surgeons, computing scientists and psychologists to develop simulation and simulation-based programs for surgical training. The long-term goal is to promote the use of simulation in surgery for improving care quality and patient safety.

### Clinical Implications of Research

Dr. Zheng investigates team composition in the operating room and its impact on the team efficiency, which may influence the management system in the operating room.

### Research Group Profile

The Surgical Simulation Research Lab (SSRL) is a custom designed multi-purpose training facility and office located in the Heritage Medical Research Building at the University of Alberta. Established in 2011, the SSRL is a nationally recognized leader in simulation research, surgical education and training. Its mission is to provide service to healthcare providers, especially surgeons, a safe environment to practice surgical skills.