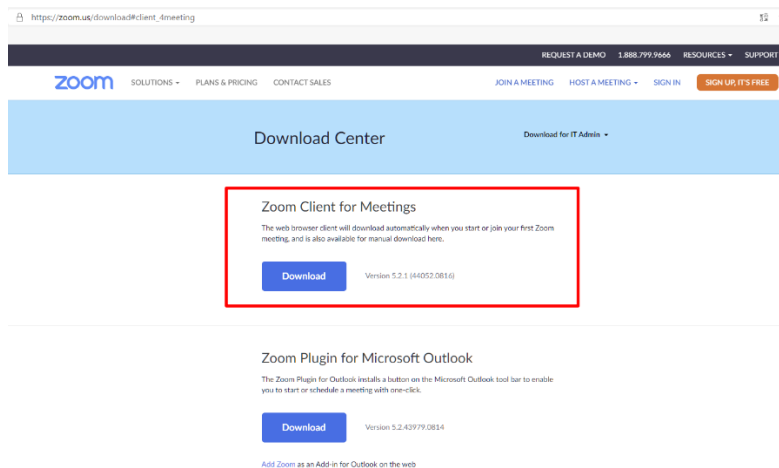


The IEEE ICMA 2020 Conference will be held online using Zoom software. You can follow next steps to join the IEEE ICMA 2020 online Conference:

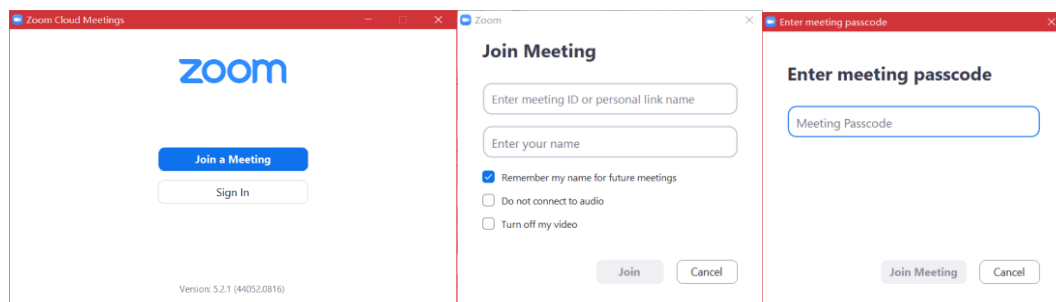
### Step 1: Install the Zoom client.

Download URL: [https://zoom.us/download#client\\_4meeting](https://zoom.us/download#client_4meeting)



### Step 2: Launch Zoom software and join the Conference.

After launching Zoom software, please click **Sign In** if you already have an account. You can click **Join a Meeting** to attend as a visitor without signing in. (For authors in the Mainland of China, you can join a meeting as a visitor and don't need to create an account.)



1. IEEE ICMA 2020 online Conference has 6 online meeting rooms. You can find the Conference Room ID and meeting passcode by clicking <http://2020.ieee-icma.org/pagefiles/ICMA2020RoomLink.pdf>.

2. When you join the room meeting, you need to modify your display name by following the format:

- If you are a staff member, please use “real name-Staff”.  
e.g., Bart Simpson-Staff
- If you are a session chair, please use “real name-Session Chair”.  
e.g., Bart Simpson-Session Chair
- If you are an oral speaker in this session, please use “real name-Session Name (Presentation Number)”.  
e.g., Bart Simpson -TP1-6(2)

The “Session Name (Presentation Number)” can be found in <http://www.eng.kagawa-u.ac.jp/~icma/ICMA2020/Digest.pdf>.

*IEEE ICMA 2020 Conference Digest*

**TP1-6: Medical Robots for Minimal Invasive Surgery (I)**

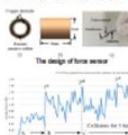
Session Chairs: Hideyuki Sawada, Waseda University  
Xiaoliang Jin, Kagawa University

[Online Conference Room 6](#), UTC+8(Beijing Time): 13:30-15:00, Thursday, 15 October 2020

**TP1-6(1) 13:30-13:45**

**A Method for Obtaining Contact Force between Catheter Tip and Vascular Wall in Master-slave Robotic System**  
Xiaoliang Jin<sup>1</sup>, Shuang Guo<sup>2</sup>, Jian Qiu<sup>3</sup>, Peng Shi<sup>4</sup>, and Daping Song<sup>5</sup>  
<sup>1</sup>Department of Intelligent Mechanical Systems Engineering, Faculty of Engineering and Design, Kagawa University, 2217-20 Nayatochi-cho, Takamatsu, Kagawa, Japan  
<sup>2</sup>Beijing Institute of Technology, Beijing, China, <sup>3</sup>Tianjin University of Technology, Tianjin, China.

- The force information of guidewires and catheters has a significant effect on the safety of vascular interventional surgery, especially the contact force between the catheter tip and vascular wall.
- In this paper, a force sensor based on the piezoresistive rubber is developed to extract the contact force between the tip of catheter and vascular wall.
- The results showed that the design of the force sensor is feasible and effective, the purpose of extracting the contact force is achieved preliminarily.

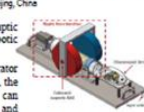


The contact force detected by the developed force sensor

**TP1-6(2) 13:45-14:00**

**A Two-channel Haptic Force Interface for Endovascular Robotic Systems**  
Peng Shi<sup>1</sup>, Shuang Guo<sup>2</sup>, Xiaoliang Jin<sup>3</sup>, and Daping Song<sup>4</sup>  
<sup>1</sup>Department of Intelligent Mechanical Systems Engineering, Faculty of Engineering and Design, Kagawa University, Takamatsu, Japan  
<sup>2</sup>Key Laboratory of Convergent Medical Engineering System and Healthcare Technology, The Ministry of Industry and Information Technology, School of Life Science, Beijing Institute of Technology, Beijing, China

- In this research, a two-channel haptic force interface for endovascular robotic system has been developed.
- With a cylinder-based force generator and a MRF-based torque generator, the presented haptic force interface can realize linear force feedback and torque feedback.

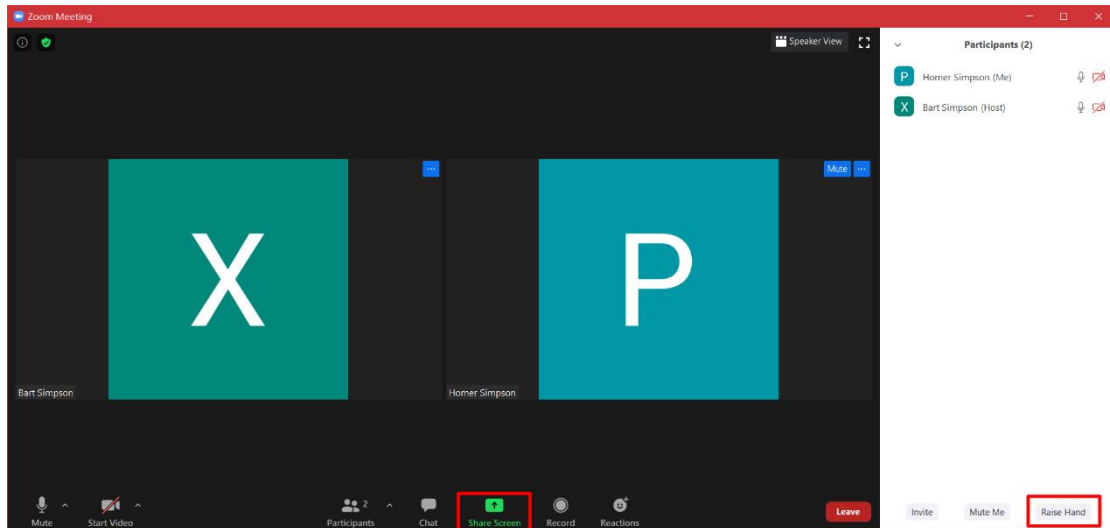


The proposed haptic force interface

- If you are an audience, please use “real name-Audience”.  
e.g., Bart Simpson-Audience

### Step 3: Start your oral speech and Q/A.

If you are an oral speaker, you can use “Share Screen” to show your Powerpoint and make your presentation for 12 minutes. In Q/A (3 minutes), the listeners can click “**Raise Hand**” to ask questions.



\* When join the Conference meeting, everyone will be muted except the oral speaker.

### Important Notes:

Each speaker has 15 minutes in total, including 12 minutes for presentation and 3 minutes for Q/A. Please get ready for your presentation in advance, the timekeeper will be activated once you start to share your screen.