Computing students and professors win 2017 RSS Best Systems Paper Award

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Mohit Shridhar (left) and Lan Ziquan, with their drone.

10 August 2017 – A team of four NUS Computing students and professors won the coveted Robotics Science and Systems (RSS) 2017 Best Systems Paper Award for their paper, XPose: Reinventing User Interaction with Flying Cameras.

The paper, authored by fifth year Computer Science PhD student Lan Ziquan, recent Computer Engineering graduate and current research assistant Mohit Shridhar, Professor David Hsu and Associate Professor Zhao Shendong, merited the Best Systems Paper Award in Memory of Seth Teller, which is 'given to outstanding systems papers presented at the RSS conference'.

They developed Xpose, a new interactive drone photo-taking system that capitalises on the drone's autonomous flying capability. First, the drone takes exploratory sample photos of the subject from various angles. These samples appear on the user's tablet or smartphone, and the user selects the sample photo that best approximates the user's desired point of view of the subject. The user then uses the touch screen to adjust the position of elements in the photo and refine the composition of the sample photo until the subject is framed exactly to the user's satisfaction. These adjustments send instructions to the drone to automatically reposition itself to capture the user's desired point of view, rather than the more common approach of requiring users to pilot the drone to a position that will afford the desired point of view. Accordingly, during user tests, users completed specific photo-taking tasks more quickly with Xpose, than with the more common drone-piloting approach.

"Xpose was a result of interdisciplinary collaboration--throughout this project, we integrated interaction design and system design. The collaboration between Prof. Zhao, a leading expert in Human Computer Interaction (HCI), and us, gave this project unique strengths. We learned a lot from each other," explained Prof. Hsu. "The other two papers that were finalists in the Best Systems Paper category were produced by researchers from Carnegie Mellon University and University of Michigan—both world renowned universities for robotics research. We were lucky to prevail over such strong competition," said Prof. Hsu. RSS is the most competitive international conference in robotics. Over 70 high quality papers addressing all areas of robotics from researchers around the world were accepted at RSS 2017, which was held at the Massachusetts Institute of Technology (MIT), USA, in mid-July.

Check out the XPose demo video.