

## **Bios**

Jamaludin Jalani is an Associate Professor at the University of Tun Hussein Onn Malaysia (UTHM). Currently, he is the head of the Department of Electrical Engineering Technology, Faculty of Engineering Technology (FTK), UTHM. Before, he was the Head of the Department for Students Affair and Alumni (HEPA) at the FTK. He received a Bachelor of Engineering Degree in Electronic and Electrical Systems Engineering in 1998 from Leeds Metropolitan University in the UK. He joined and gained industrial experience at Sharp Manufacturing Malaysia from 1999 until 2002. In 2005, he received a Master of Science in Mechatronics Engineering at the International Islamic University of Malaysia. He obtained a PhD at the University of Bristol, UK in 2013. His research considers the compliant control, human-robot interaction, sensors, development of robotic hand and mechatronic system, and control system.

## **Title:**

The Need of Robust Compliance Control for Robotic Hand

## **Abstract:**

The focus of this project is on compliance control in robots, in particular for the humanoid robot hand, which is capable of working in the same environment as humans, able to interact with humans and to grasp any objects safely. The applications of humanoid robots, in particular in the fields of service robots, medical applications, and operation in hazardous environments are of primary importance. This requires a robot to be equipped with sensors for monitoring vital signs and emotional states. Hence, providing robust and compliance control for the robot hand can be one of the solutions to resolve safety issues. In order to provide compliance control, understanding the function of the human hand is essential. The human hand is one of the most important sensory organs and actuators of the human body. It has the capability to distinguish a touched object in various forms such as object thickness, object softness and object weight. Eventually, the hand will respond accordingly when grasping such objects without damaging them. Likewise, a robot hand should be able to perform the same tasks before entering the human environment. Different compliance control strategies are proposed in this project to mimic the same or close to human hand characteristics and performance.