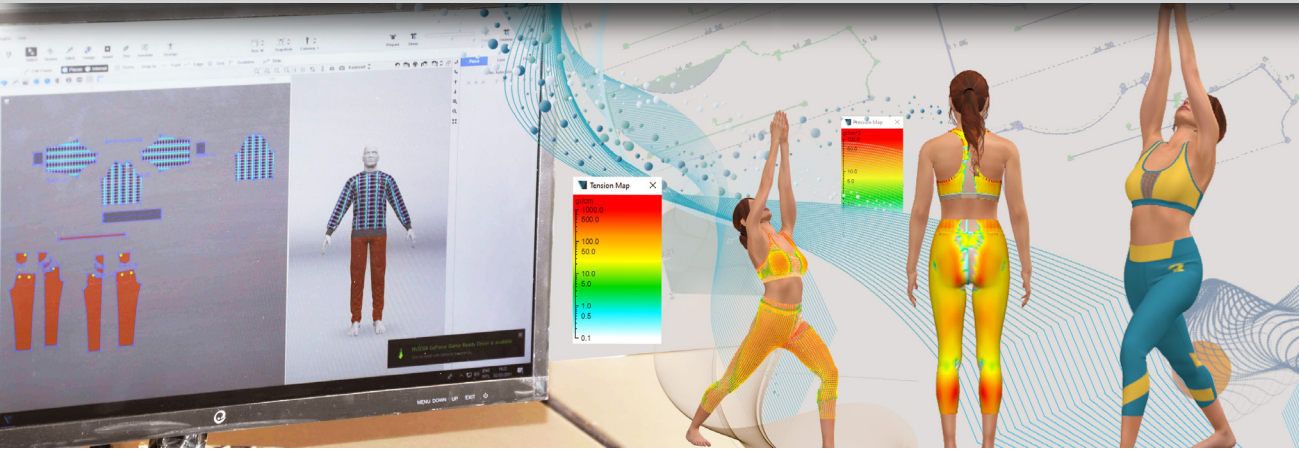




# Digital Technology Deployment in Apparel Product Development



Digital technology is demanded in various business models, that is from mass production to mass personalization. With the rapid development and adoption of digital technologies, clothing manufacturers tend to provide digital customization of clothing (Yan & Chiou, 2020). Therefore, this workshop aims to demonstrate how modern technologies can be utilized in future apparel development process centering on the human body in the process.

Most of the clothing rejects take place due to incorrect sizing, often when what is offered does not match the body and expectation of the wearer. The first objective of the workshop will address the human body anthropometry and how this links to apparel sizing issues which affect to correct sizing of the finished goods. Currently, apparel manufacturers who engage in contract manufacturing, receive sizing guidelines from their buyers. In contract manufacturing, physical samples are dispatched to buyers to validate the product measurements. In this workshop, different sizing systems and the development of standard size charts will be explained, we will also explore the mechanics of sizing to understand the variables. However, the physical sampling process delayed the product life cycle, especially during pandemic situations. In such situations, body scanning technologies along with the virtual prototyping tools will immensely support the product development process. Apparel manufacturers who develop contour garments such as swimwear, mobility, intimate apparel and compression garments need depth knowledge indeed in body anthropometry and garment sizing, often considering negative ease to create the product. Moreover, 3D body scanning technology will add more value to digital customization of clothing by providing clear references to bodies to support product development. Due to the diversified

needs of the apparel consumer, apparel needs become unique from one consumer to another. In doing so, apparel manufacturers strategize ways to optimize the sample approval process using virtual prototypes. During the workshop, one of the virtual prototyping tools will be demonstrated and discussion will centre of areas where advances could shorten development times. Existing 3D CAD tools support in developing virtual prototypes based on the customer requirements, however, the relevant software tools need to be improved for better rendering and easier use in a workforce less grounded in physical production. Mostly, current 3D CAD systems are employed to assess the visual appeal. Hence, the limitations of applying 3D CAD tools in compression clothing will be discussed with examples.

During the production process, 2D fabric material will be cut and assembled in 3D form. The third part of the workshop is devoted to discussing the available computational geometric tools and algorithms for 2D regular and irregular shapes cutting and packing tasks. This is highly applied in apparel production. In this process, 2D shapes are arranged to maximize the utilization of fabrics. Automated, fast responding algorithms are used to efficient this process and modern systems are now being equipped with those tools that make the process efficient and economical. During the workshop session, resource persons will share up-to-date knowledge on those tools and techniques.

Finally, the speakers will plan an interactive session to investigate how digital technologies have been deployed in apparel manufacturing in Sri Lanka. This indication will help to understand the digital maturity within the product development in the Sri Lankan apparel industry.

## Speakers

### Dr R. K. Jayamali De Silva

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### Dr Simeon Gill

Senior Lecturer, The Department of Materials, University of Manchester, United Kingdom

### Dr Kristina Brubacher

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### Dr Ranga Prasad Abeysooriya

Senior Lecturer, Department of Textile and Apparel Engineering, University of Moratuwa

## Workshop Objectives

1. Characterize the apparel sizing issues and introduce the 3D body scanning technology in developing effective apparel sizing systems.
2. Demonstrate and discuss the opportunities in the application of 3D CAD tool in virtual prototyping.
3. Demonstrating computational geometric concepts, algorithms and tools used for cutting and packing 2D shapes
4. Discuss the limitations of applying digital technologies in apparel product development.

## Aim

To demonstrate relevant digital technologies which are used in apparel product development and measure the digital maturity within the Sri Lankan apparel manufacturing industry.

## Target audience

Mainly apparel industrialists who involve in apparel product development will be benefitted. Also, academics and students will be aware on the digital technologies which relates to apparel product development.

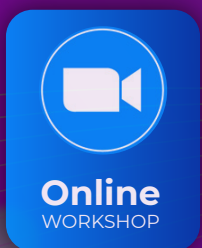
# WORKSHOP 3

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