ANALYSIS OF MOTION SIMULATION WITH AI TECHNOLOGY

SOUTHERN UNIVERSITY COLLEGE
南方大学学院

INTRODUCTION

Humans interact with machines in a variety of ways, thus many forms of HCI (Human-Computer Interaction) has been developed. To control the robot, a new technology is invented, which is virtual reality (VR). It includes hands, face and other parts of the body. Hand gestures can be divided into two categories: static and dynamic gestures. In static gestures, the gestures usually do not change its shape over time. Depending on the type of the input data, the hand gesture recognition can also be divided into two categories: appearance-based and 3D model-based algorithms. Appearance-based algorithms use the data acquired from the silhouette or contour of the input images. Meanwhile 3D model-based algorithms use volumetric or skeletal data, or even a combination of the two.

PROBLEMS

- Wearable technology is facing the variety of challenges in evaluating design and algorithm, human centered design and personalization.
- Through the new technology of leap motion, we can say bye to mouse and keyboard.

MAIN IDEA

- To investigate the estimation performance variation in frequently considered fait markers, stride count, stride cadence and stride duration
- To learn the leap motion and how its make the use in hospitality, and also in game .

METHODOLOGY

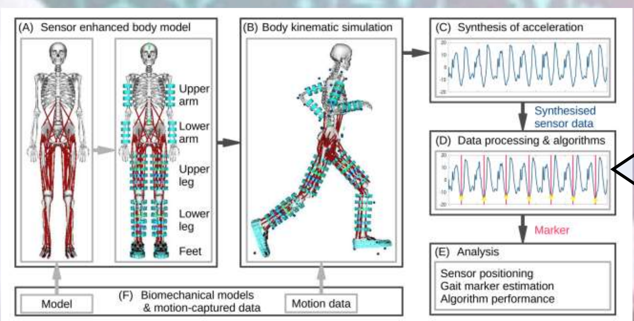

Figure 1. Human motion analysis using personalized biomechanical models, simulation, and data synthesis to estimate wearable system and marker performance. (A) Illustration of the personalized full body model, extended with motion sensor models at upper and lower body extremities. (B) Body kinematic simulation of the sensor-extended full body model with video motion-capture data. (C) Sensor data synthesis (here: acceleration) using a direct-link sensor-body attachment model. (D) Processing of synthesize acceleration data using gait marker estimation algorithms. (E) Analysis of individual movement effects on gait markers, sensor position on the body, and estimation algorithms. (F) Biomechanical models and video-motion data obtained from the public SimTK repository.

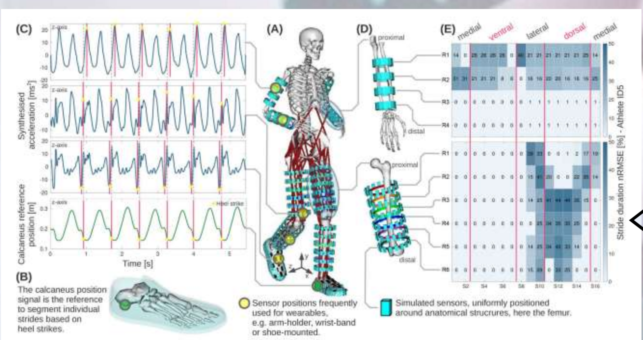

Figure 2. Illustration of the wearable motion analysis based on biomechanical simulations and sensor data synthesis. (A) Illustration of the sensor-extended, personal full-body model while running, (B) Feet models with an inertia-free shoe model used to place sensor models. (C) Example of the acceleration time series data synthesized for each simulated sensor. (D) Zoomed view of the lower arm (64 sensors), and the upper leg (96 sensors). For visualization of the sensor positions, the femur was rotated. (E) Normalised root-mean-square-error (nRMSE) of the marker stride duration, derived between simulated sensors and the calcaneus reference. Colour-coded nRMSE maps shown here for athlete ID5

CONCLUSION

- A 3d model can be created through LEAP motion
- Leap motion also have various disadvantages.

1. Screen will easy get dirty
2. Screen need to be large enough
3. When touch with wet finger, a little electric shock will be felt

NAME : LIEW ZHONG CHENG
STUDENT ID: B150167C
PROJECT SUPEVISOR: Dr Vasanthan A/L Maruthapillai