#epd

MESSAGE FROM HEAD OF PILLAR, PROFESSOR RICKY ANG

Dear EPD family,

As we slowly approach toward our SUTD Graduation 2018 in September, we have many exciting activities kicking off the term, with our EPD Faculty Meeting, the EPD Distinguished Lecture as well as a many EPD Outreach events to the various institutions. Let us keep this energy going as we sail into Term 4 & 6. Cheers!

UPCOMING EVENTS

3 JULY

EPD Faculty Meeting

18 JULY

EPD Distinguished Lecture **"Localization Of Electrons In Semiconductor Based Core-Shell Nanowires"** by **Professor Andrei Manolescu**

10-25 JULY

EPD Outreach

Anglican High School
St Nicholas
NJC
AJC
R.I
VJC
AJC
Pioneer JC

FEATURED: SUTD Knee Model

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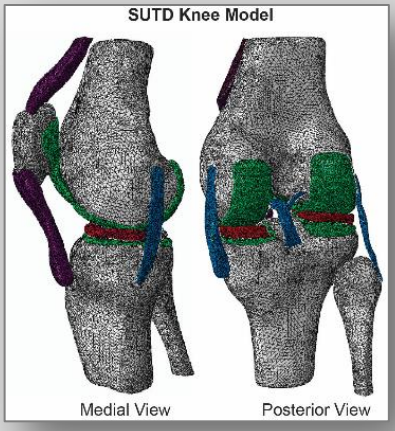
Karupppasamy **Subburaj**, Professor (Asst.), EPD

The knee joint is the largest and one of the complex joints in the musculoskeletal system, which supports the body weight and facilitates locomotion. This project involves the development and deployment of a computational framework for continuum modelling of the knee joint to assess its biomechanical behavior under different clinical conditions. The associated data includes medical imaging of the knee joint in the form of magnetic resonance (MR) images and three-dimensional motion capture of walking and other motion trials, with concurrent recordings of ground reaction forces.



Anatomically accurate geometry, constitutive modelling of joint ligaments, mathematical modelling of the soft tissues (cartilage, ligaments, and menisci) behavior, realistic loading conditions (gait forces and moments), model verification, and model validation are the worth-mentioning issues we are dealing with in this project.

The developed patient-specific finite element (FE) model of the knee joint was implemented to study the biomechanical behavior of the knee joint under intact, injured, implanted, and braced conditions. In this project, we exploited the potential of FE analysis to estimate the contact conditions in the affected and the healthy compartments. This FE model can be used as a decision aid for improving decision making of clinical interventions in patients with knee injuries, knee disorders, and knee-related diseases (e.g. Osteoarthritis).

ENGINEERING PRODUCT DEVELOPMENT

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