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Design, simulate and 3D print customized patient specific implant and guides from 3D medical scan: A study of knee implant

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Patient specific technology is slowly gaining popularity and clinical adoption. In this study we designed, simulated and 3D printed a knee implant. Patient CT scan data was imported into ImageSim software from VOLMO (UK). ImageSim has number of features to smooth and filter the data; filtered data was exported as STL model of full knee. The full knee STL model was then imported into TSV tools available in ImageSim for CAD functionality. Resection of Femur and tibia was done in TSV environment. Resected knee model was imported in Solid works software

and new components for femur, tibia and polymer insert were designed and exported back into TSV. All the new components and original resected bones were assembled and positioned. New assembled model were remeshed and then volume meshed. Contacts, material properties and boundary conditions were assigned before final model was exported into Ansys for finite element analysis. Static analysis for a full gait cycle was carried out in Ansys and the results obtained will be presented in the conference.

Biography

Ash Harkara has completed his PhD from University Pune and Postdoctoral studies from school of EE, University of Leeds, UK. He is a founder director of VOLMO LTD. He has been presented papers in number of conferences and published papers in reputed journals.

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