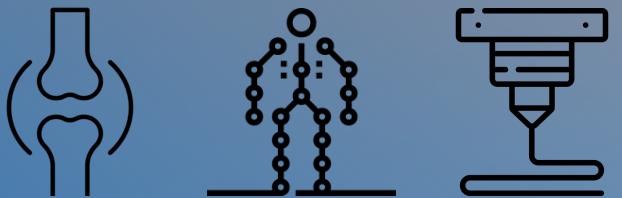


HONGJIA (DULOC) HE

# PORTFOLIO

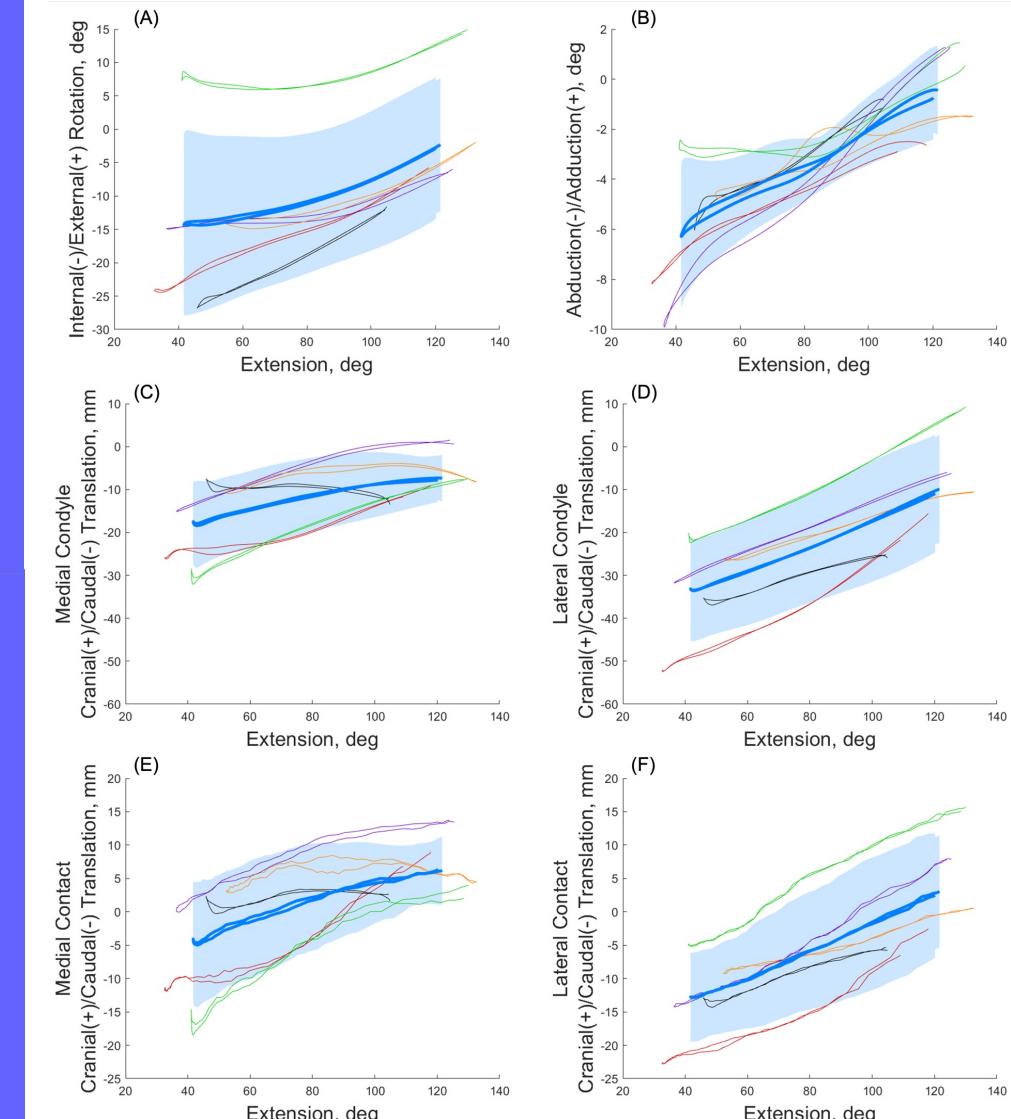
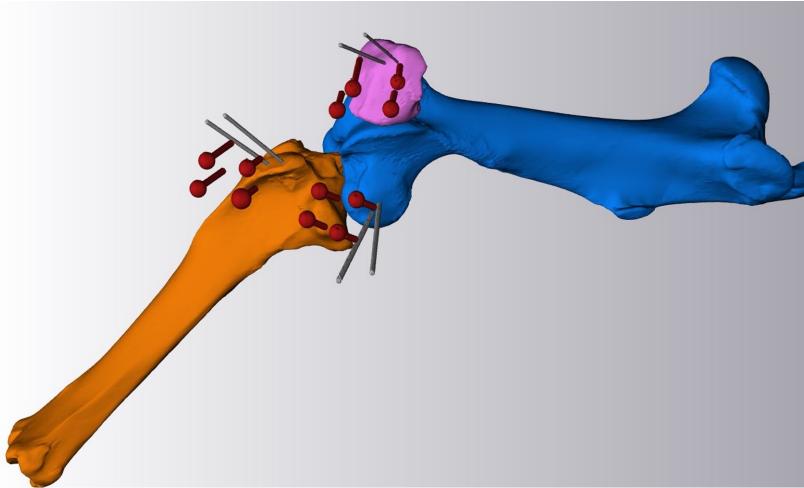
BIOMECHANICAL ENGINEER AND RESEARCHER



hehongjia@ufl.edu

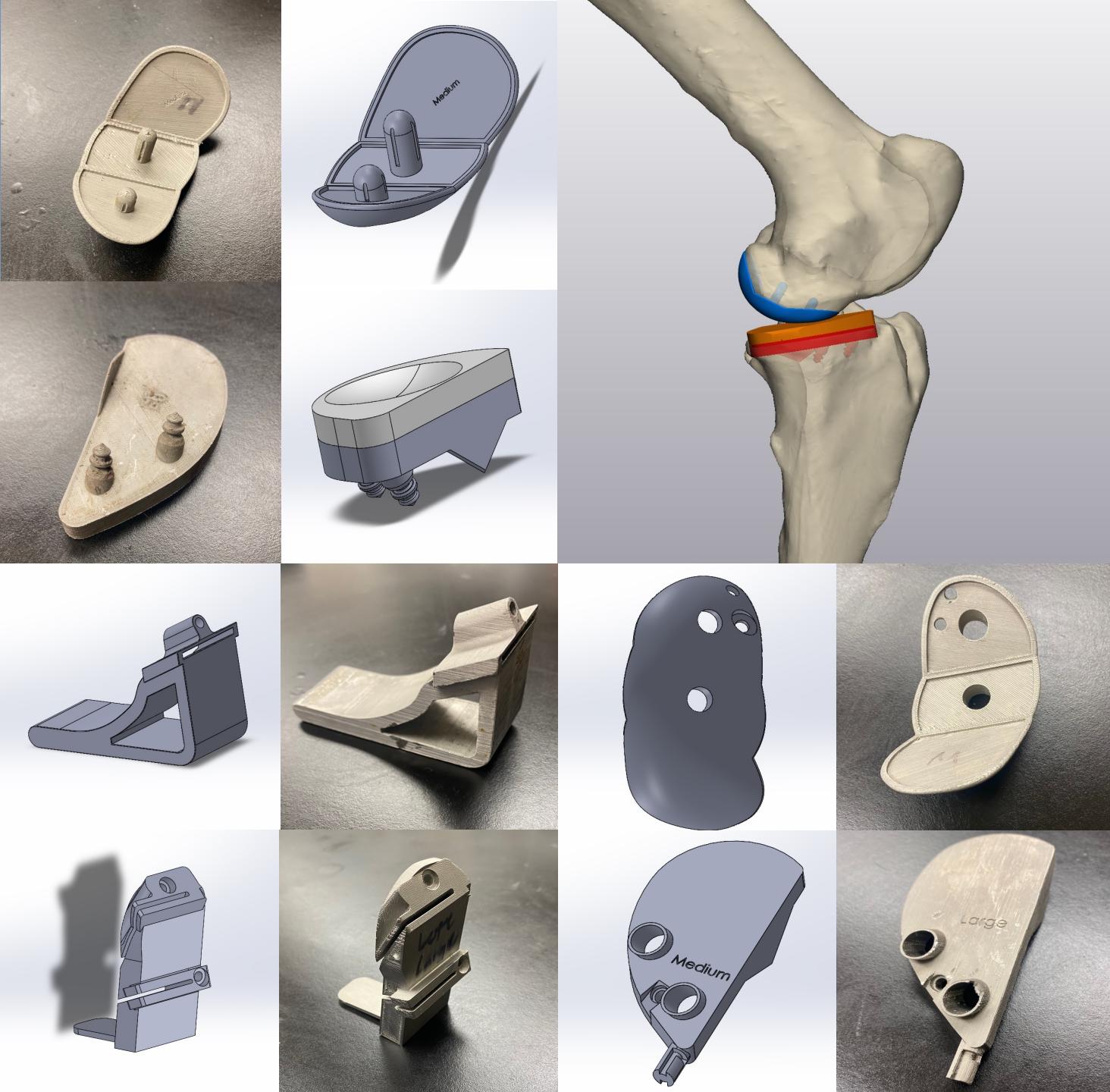
# Equine Stifle Joint Kinematics Using Optical Motion Capture

- 3D anatomical models and marker arrays derived from image segmentation
- Six degrees of freedom joint kinematics with visualization generated using MATLAB



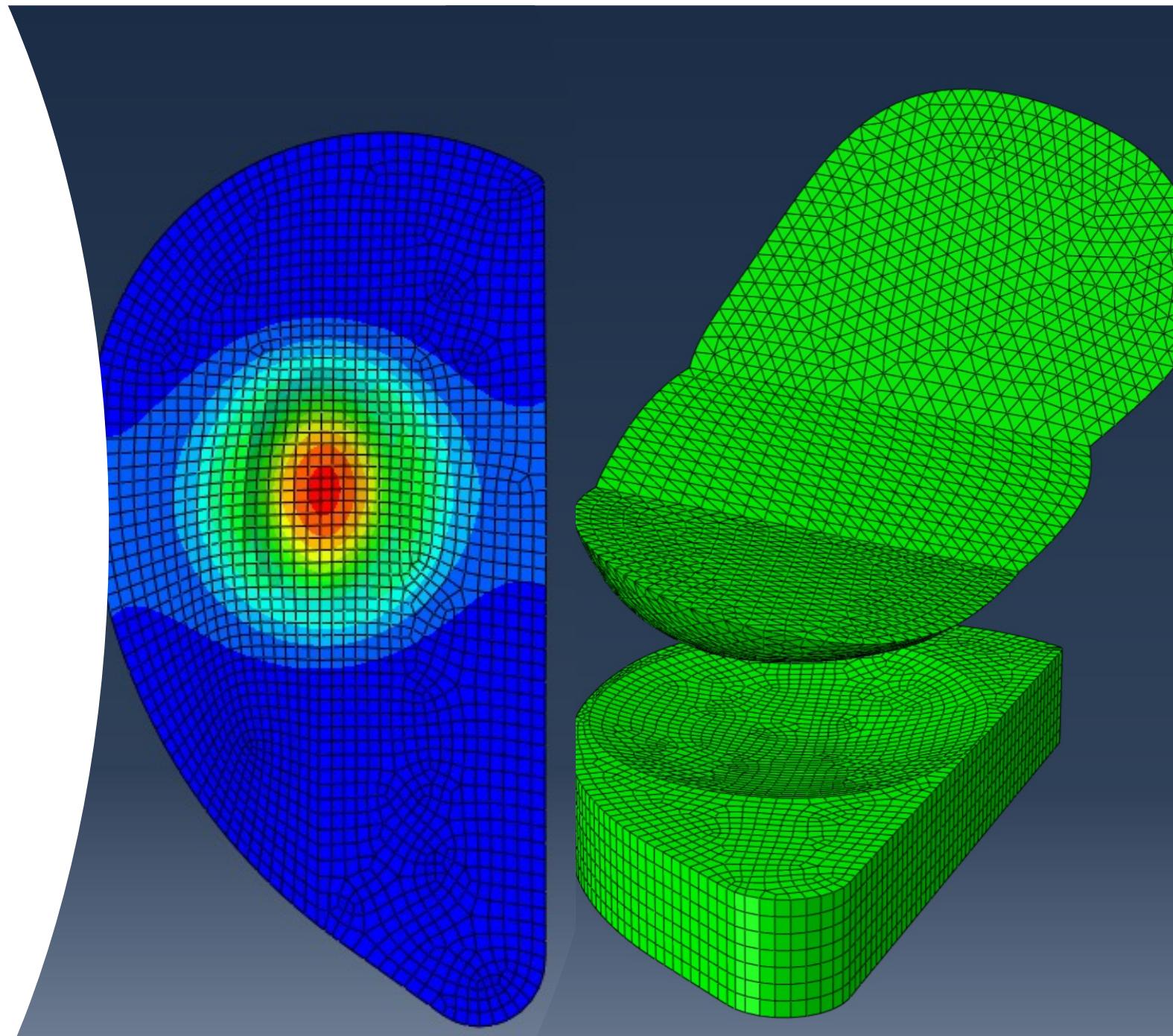
# Equine Unicompartmental Knee Replacement Implants & Instrument Design

- ❑ Joint kinematics and statistical shape model-driven designs
- ❑ Designs verified and validated through surgery labs and cadaver trials
- ❑ FDM 3D-printed implants and instruments with metal



# Finite Element Analysis of Implant Contact

- Finite element models of femoral and tibial implants at various alignments to investigate the contact stress and plastic deformation during contact
- Different implant designs with various contact geometries to minimize contact stress without limiting the range of motion under cyclic loading

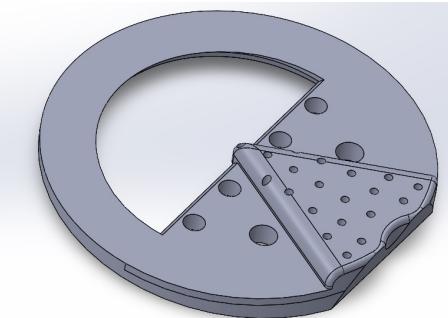


# 3D Printing & Designs

A collection of 3D-printed products designed in Solidworks and Materialise 3-matic for clinical and research use with various materials, including ABS, PC-ISO, carbon fiber, Biomed resins, and more.



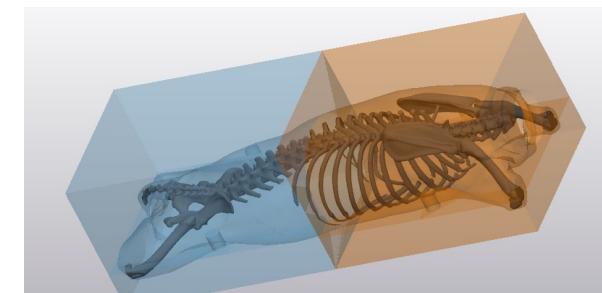
Customized trocars and cannulas 3D-printed with various materials (presented at VOS conference)



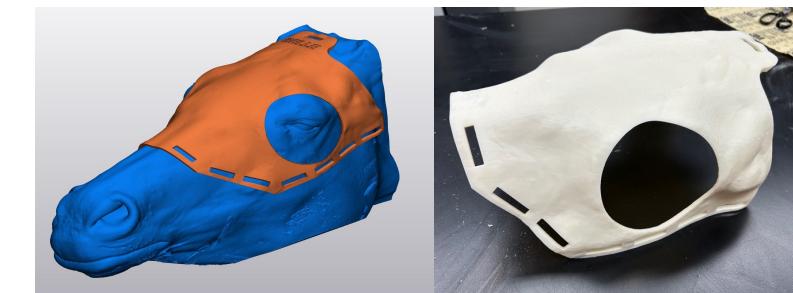
Equine hoof pad designed for elastic 3D printing material



Patient-specific goat hoof prosthesis



Anatomical canine skeleton model with full-body mold



Patient-specific equine helmet for post-operative rehabilitation