

3D Modelling of Human Lower Extremity Bones using

Photogrammetry by Jasmine Feddema

PURPOSE/OBJECTIVES

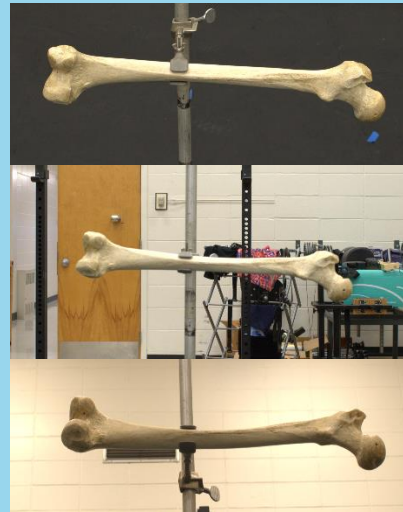
Develop a procedure to generate 3D reconstructions of lower extremity bones using a digital camera and photogrammetry software

METHODS

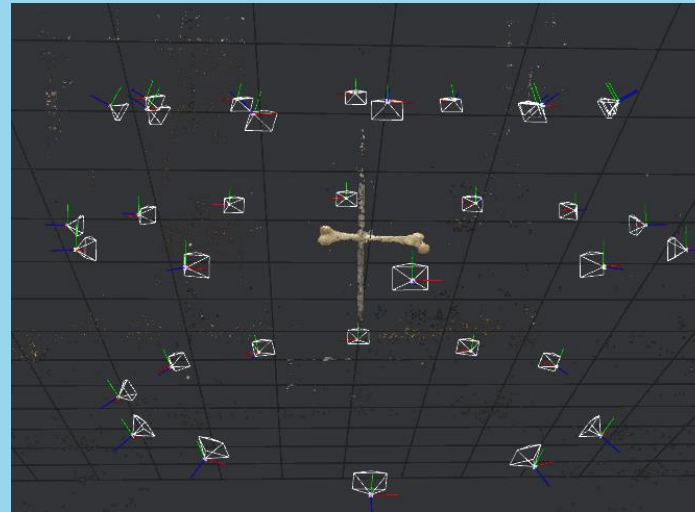
A camera was used to capture overlapping images surrounding a human femur. Pictures were inputted into the photogrammetry software Meshroom for creation of the virtual 3D model and edited in MeshLab

RESULTS

The model created by the photogrammetry software permitted bony landmarks to appear clearly.



Bone Photos



Meshroom Interface

CONCLUSION

A digital camera and open-source photogrammetry software are highly efficacious in producing 3D models of human bone geometry. These models may be useful from an anatomical education perspective as digital media. Furthermore, these models will enhance research investigating the precise motions created when muscles exert force on a bone.

REFERENCES

[Cignoni et al. \(2008\) MeshLab: an Open-Source Mesh Processing Tool](#)
[Griwodz et al. \(2021\) Meshroom: An open-source 3D reconstruction pipeline](#)

ACKNOWLEDGEMENTS

This project acknowledges financial support from the Human Performance Fund at the University of Alberta.



Final 3D Model-MeshLab