

**Assistive technology and rehabilitation: A quantitative study of the effects prosthetics external pressure upon the calvaria of children diagnosed with plagiocephaly and brachycephaly.**

**Supervisory team: Dr Hessam Ghasemnejad and Dr Olqa Duran**

Plagiocephaly and branciocephaly are distortions of the skull shape in babies. Currently the only treatment for these deformations is a prosthetic helmets or band that applies pressure to the skull. Complications resulting from this form of therapy have been reported. The aim of this project is to apply interdisciplinary creative methods of computational modelling combined with advanced sensing techniques to design an assistive device to quantify pressure levels and distribution. 3-dimensional finite element models of babies skulls are to be created based on MRI scans showing shape and bone structures that indicate pressure points and vulnerable areas. A specialised rig with sensors will be created to examine the current pressure distribution and feed that data to the FEA model. Finally, a new controlled system to systematically correct the asymmetries in the skull without posing any short-term complications or long-term risks will be designed.