Orthodontic Faculty Development Fellowship Award

Dr. Mohamed Bazina, *University of Kentucky*

Biography

I am an assistant professor of Orthodontics at the University of Kentucky College of Dentistry. I earned my dental degree from University of Benghazi and completed my orthodontic residency at CWRU. I also did a craniofacial fellowship at Case and I am a board-certified orthodontist. I have a keen interest in 3D imaging research and in technology. My master thesis was on testing different software programs for 3D voxel-based superimposition on the cranial base of non-growing patients and that is an area where I would like to continue to grow in. I teach residents/dental students, supervise residents in the orthodontic clinic, supervise residents' research projects, and treat patients in the faculty practice.

Project Synopsis

Several studies have attempted to understand the complex mechanism of maxillary growth and remodeling. Serial cephalometric radiographs have been used to understand facial growth and to determine the stable areas of reference to evaluate maxillary changes during growth. Superimposition on stable maxillary structures can be used to evaluate growth and treatment effects in the maxillary dentoalveolar complex. Multiple 2D maxillary registration methods have been proposed in the literature. Superimposition of cephalograms has many uses in orthodontics, but cephalograms are distorted and show incomplete two-dimensional data. Cone Beam Computed Tomography (CBCT) provides a three-dimensional undistorted and more complete analysis of our patients. Superimposition of 2 CBCT's is possible by using landmarks, surfaces, or density information (voxel-based). Voxel-based superimposition is automated and uses the most image content, providing the most accurate result. Until recently such superimposition was extremely laborious, but a user-friendly voxel-based superimposition has recently been introduced. The aim of my research project is to evaluate the accuracy and reliability of different methods of fast regional maxillary voxel-based superimposition that can be used in the clinics. areas of registration will be tested and compared to each other and to the 2D maxillary superimposition results as recommended by the American Board of Orthodontics.

The Importance of the AAOF

The AAOF Award has been a huge support for me to develop as a scholar, educator and a clinician. Part of the award money was used to cover the hardware cost of the project, the travel expenses for training and scientific meetings. Without such support, it would be hard for junior faculty to advance in academic dentistry.