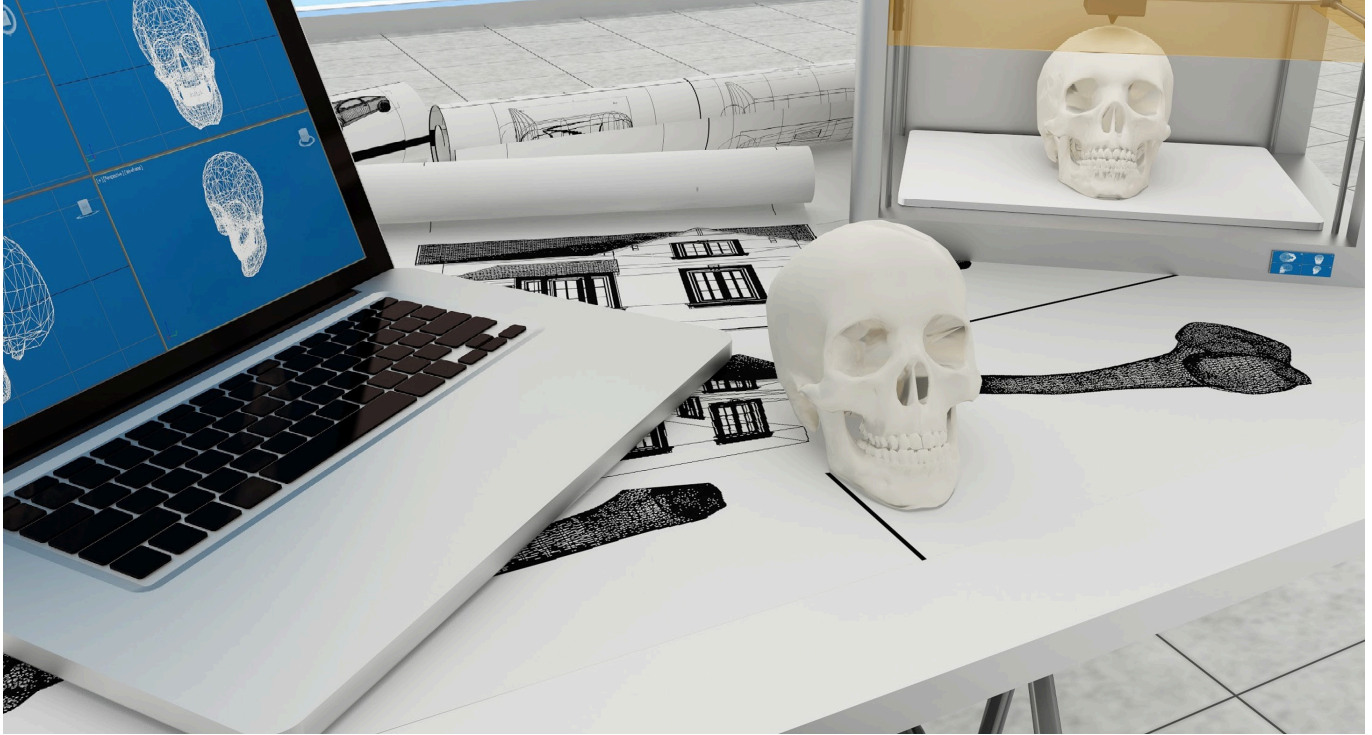**TECH OFFER**

Automated 3D Models from CBCT Segmentation

KEY INFORMATION

TECHNOLOGY CATEGORY:

Healthcare - Telehealth, Medical Software & Imaging

TECHNOLOGY READINESS LEVEL (TRL): **TRL7**
COUNTRY: **HUNGARY**
ID NUMBER: **TO174854**

OVERVIEW

When planning surgeries, doctors and medical engineers need to create 3D surgical plans pre-operation, and their only way to model internal body parts is to rely on Computerized Tomography (CT) images. For patients living with implanted metal artifacts, the artifacts will lead to an interference on image generation and visualization of anatomical structures thereby resulting in visual errors of the images. Current available CT image generating tools has its limitations in processing images with visual noise such that it greatly reduces the visibility of hard and soft bone surfaces. This leaves medical engineers with an extended period of manual image correction and uncertainty, resulting in higher risk of unsuccessful surgeries due to inaccurate surgical modelling. The process of bone segmentation usually takes several hours as Cone Beam Computed Tomography (CBCTs) need to be corrected manually.

To overcome these challenges, the company has developed an algorithm to create automated 3D models that is cost-efficient and timely. The technology is able to deliver precise anatomical identity of both hard and soft bone surface and is compatible with all segmentation and planner software.

This technology is clinically proven for Maxillofacial and Orthodontics 3D surgical planning (bone grafting and implantation) and can be integrated into systems of CBCT machine and Medical 3D printer.

TECHNOLOGY FEATURES & SPECIFICATIONS

- 3D models are created within 5 minutes
- Reduce manual CT correction by 90%
- 86-95% accuracy in clinical trials
- Targeting oral CBCT anatomical region
- Simple and fast user interface (after registration, CBCT recordings can be uploaded, afterwhich user can download the 3D models)
- Offers engineering assistance for implant and bone replacement surgery planning (in complex accident-traumatic cases)

POTENTIAL APPLICATIONS

- Orthodontics and maxillofacial surgeries.
- The technology can be developed for all CT types (including animal CTs).
- The software can currently be used as a web service or be integrated into CBCT machines.

MARKET TRENDS & OPPORTUNITIES

- Dental imaging market is projected to reach USD 4.1 billion by 2025 from USD 2.6 billion in 2020.

UNIQUE VALUE PROPOSITION

- Faster, cheaper and more accurate surgical planning for Selective Laser Sintered Implant, 3D printed Surgical Navigation Tool and 3D Bone Block.
- Competitors create their 3D models from CBCT records by 50 minutes manual work. This technology is able to create the same quality 3D models from the same CBCT records by 5 minutes without human work.
- Compared to existing CBCT segmentation deep-learning software that performs segmentation of bone structures according to predetermined geometries (different bone parts are registered in advance), this tehcnology method automatically classify pixels belonging to bone structures with acceptable precision.
- Bone surfaces are accurately segmented, and the planned implant is of the right size and fits properly to reduce surgery risks and re-construction of surgery.