

S U R G I C A L N A V I G A T I O N S Y S T E M S

About Parsiss Company

The Image Guided Surgery group of Parsiss has started working on the design and implementation of a comprehensive IGS system since 2007 in Iran. This system not only offers the features of the existing systems in the market but also aims to implement new advanced features to overcome problems in more complicated surgeries.

Parsiss offers two different fully customizable platforms for developing surgical navigation solutions to guide the surgeon in a wide range of medical procedures. These systems use alternative tracking technologies and are designed to greatly reduce the time, cost and effort required for creating a certifiable state-of-the-art surgical navigation solution along with the richness of high navigation accuracy, fast visualization, segmentation and registration software platform.

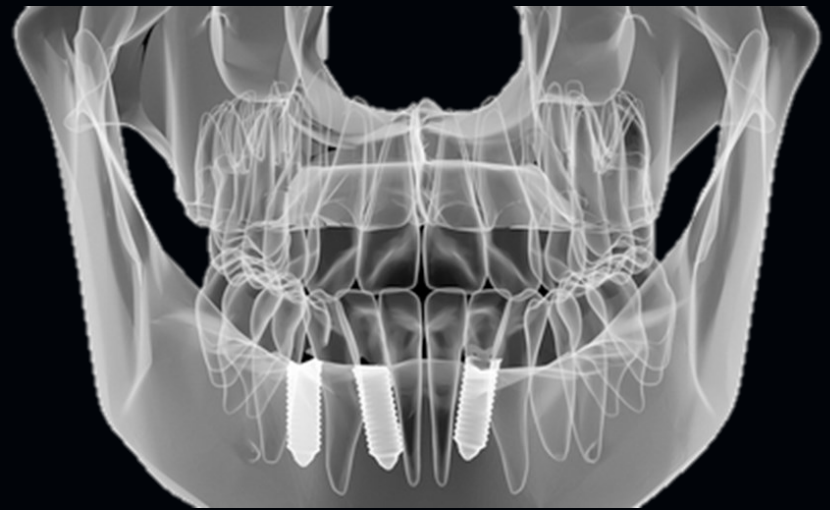
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PARSEH INTELLIGENT
SURGICAL SYSTEM CO.

Main procedure

- Medical image acquisition before surgery
- Uploading medical images to the system
- 3D model construction from medical images
- Registration between medical images and patient in the surgery room
- Tracking instruments in the field of surgery by stereo camera
- Computing tooltip position in the surgery field and display on medical images



Optional procedures

- Define and segment critical 3D objects
- Path planning of the surgery
- Using multiple medical images simultaneously
- Connect to other medical devices

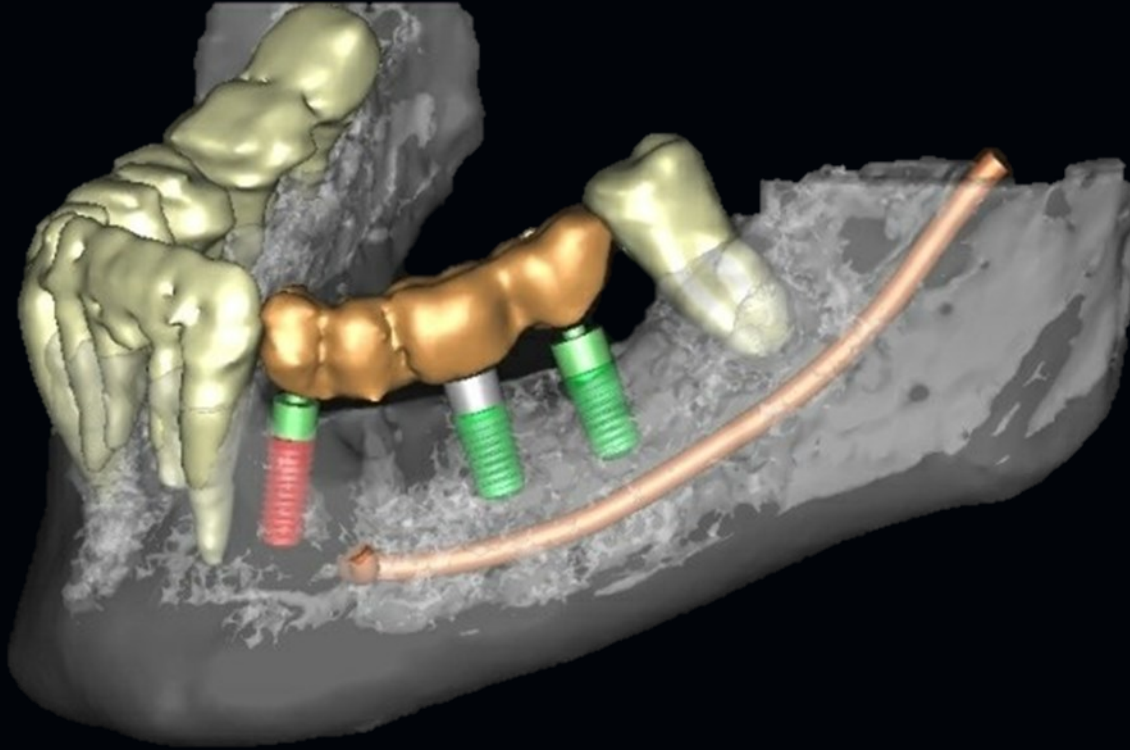


Navigation Principles

The medical community has increasingly focused on minimizing the invasiveness of surgical procedures. Advances in imaging technology and instrumentation allow minimal invasive surgery (MIS) through very small incisions to perform surgical procedures. A growth in this proportion will have many benefits for patients including fewer complications, shorter hospitalization, faster recoveries and reduced treatment costs.

The state of the art image-guided surgical navigation systems enhance surgeon's ability to navigate instruments and target specific anatomical structures. This system tracks the location of surgical tools and indicates their positions on patient-specific images already reconstructed from pre-operative image datasets similar to GPS system used to navigate a vehicle.

Features



General Features

- Perfect design with small footprint and high maneuverability
- Easy positioning of the large display dedicated to surgeon tasks
- Virtual key and foot switch to activate predefined system tasks
- UPS support to continue working in the case of power failure

Import & Manage Image Dataset

- Support different type of DICOM datasets, e.g., CT, MR and PET
- Import images from different media, e.g., DVD, CT and memory stick.
- Automatic detection of image dataset's problems
- Compatibility check of image datasets to comply with navigation requirements
- Orientation correction of image dataset
- Add new image dataset to the existing data intraoperatively

Image Fusion

- Accurate registration of images from different image modalities, e.g., CT and MR
- Fast and automatic registration, using advanced algorithms
- Fusion refinement using manually selected landmarks
- Fusion of image datasets with different voxel size and imaging field

Segmentation & 3D Reconstruction

- Automatic and fast segmentation of bone and skin from CT images
- Semi-automatic segmentation of the selected regions in different image modalities
- Capability to specify the VOI (Volume Of Interest) for segmentation
- Display sections of 3D models in standard 2D views
- Capability to define critical anatomical regions

Composite Modeling

- Fast and easy overlay of fused data and 3D models from different modalities
- Automatic validity check of the composite model
- Automatic correction of the composite model based on updated fusion results

Surgical Planning

- Preoperative simulation of surgical procedure in virtual environment
- Capability to set and modify target and entry points on 2D images or 3D model
- Capability to adjust visualization parameters of the surgical path, e.g., color and opacity
- Trajectory animation of the surgery approach

Tracking Device

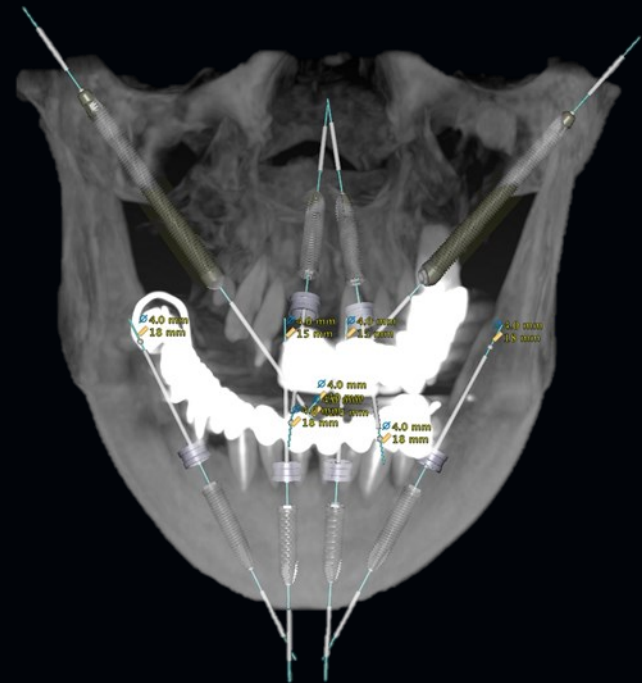
- Support active and passive surgical instruments
- Automatic detection and validation & easy calibration of surgical instruments
- Handy and multiface instruments to facilitate surgical maneuver

Registration

- Display landmark registration error in 2D and 3D model for registration refinement
- Auto-capture of selected landmarks
- Automatic evaluation of the new captured landmarks
- Surface registration to achieve higher registration accuracy
- Inform final registration error

Navigation

- Capability to define check points for intraoperative verification of registration accuracy
- Real time display of distance between predefined target points and tooltip
- Dynamic 3D cutting of the model at current position of the tooltip
- Capability to freeze images in order to review, measure and other operations
- Audio-visual alarm when the tracker misses the reference or tools
- Audio-visual alarm when the tooltip approaches to the predefined critical area
- Auto-snapshot from surgeon's view of interest
- Intraoperative surgical simulation using virtual tip
- Auto-measurement of distance from tooltip to arbitrary points
- 3D distance measurement



Selected Features

- Stand alone planning station with all demanded features
- Unique design to achieve maximum view of display
- Tracking device with extensive field of view
- Accurate and fast registration
- Extensive operation area coverage with two long articulated arms
- Review of surgery procedures by auto saved information

SUPPORTS

Warranty

All products of the Parsiss company includes warranties and after sale services.

Preventative Maintenance

Regular operational and maintenance checks are carried out within agreed intervals, including necessary repairs and upgrades, to keep the system in a performance optimizing condition.

Emergency Service

Trained service personnel are constantly available whenever any operating problem occurred.

Customer Training

We train surgeons and operating room staffs, giving them the necessary knowledge and resources to adequately operate with Parsiss navigation system.

System Upgrades

New software developments become available as we strive for continuous development. By implementing these you can improve system performance and reliability even further.

Operating Room Experts

Dispatch operating room experts for each surgery which used Parsiss navigation system.

Special Support

Manage extended warranties and service contracts.

Parts Supply

Guarantee to provide spare parts including hardware, instruments and mechanical parts.