stryker imorphics

Precision. Insight. Innovation.

Press Kit:
## Rapid and accurate automatic segmentation of 3D MR & CT images

Imorphics technology automatically analyzes CT and MR images to rapidly identify organs and tissues with sub-millimeter accuracy. Our technology increases the speed and efficiency at which radiotherapy treatment can be planned; clinical trials can be conducted; and information can be extracted from large numbers of images in big data radiology.

The varied applications of Imorphics revolutionary technology have resulted in a proven track record of delivering high quality medical device software components, and excellent clinical trials support services for a global footprint of customers.

Clinical Trials

Imorphics technology and software applications for automated measurements and novel imaging biomarkers are used in rheumatoid arthritis (RA), osteoarthritis (OA) and other therapeutic areas to reduce the time and number of patients enrolled in clinical trials by half.
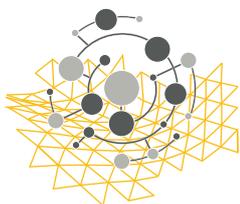
Big Data Analytics

Imorphics statistical modeling technology automatically organizes population data to account for and quantify human variability. By rigorously comparing shape and appearance variation, Imorphics technology enables the accurate quantification of disease status and progression enabling reliable comparisons between subjects and between timepoints.
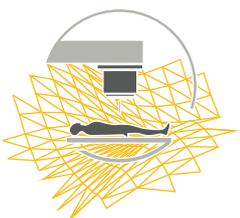
Radiotherapy Treatment Planning

Imorphics automated contouring technology may be used to speed the process of planning radiotherapy by rapidly finding and delineating the organs at risk that must be spared during radiation therapy. Our technology can reduce the time it takes to produce a plan ready for review from several hours to several minutes.

Why Imorphics?

Imorphics unlocks the potential of medical images to enable world-class innovation.

Our expert team of scientists have developed revolutionary patent-protected methods to radically improve the performance of 3D Active Appearance Models (AAMs). The technology now represents a rapidly trainable platform for the automated segmentation and analysis of virtually any anatomical structure or tissue in a 3D medical image.

Using this machine learning technology, we have now demonstrated fully-automated identification and segmentation of tissues such as bones, cartilage and other musculoskeletal tissues, sub-cortical brain tissues, prostate, liver, and other abdominal organs, skulls and sinuses with sub-voxel or sub-millimeter accuracy.

For accuracy

Achieve sub-millimeter accuracy on the definition of bone or soft tissue boundaries in orthopedic clinical trials and surgical planning applications using Imorphics advanced machine learning model-based segmentation algorithms.

For precision

Repeatability of automated organ or bone surface definition of around 1% takes the uncertainty out of image guided radiosurgery and musculoskeletal clinical trials data.

For image segmentation that is scalable

Manual segmentation or contouring of anatomical regions in 3D medical images is extraordinarily time-consuming since it means hand-drawing region boundaries on each of, sometimes hundreds, of 2D image slices. Automation reduces this task to a rapid review process of the computer drawn contours.

For population modeling

Use statistical shape and appearance analysis technology to capture and describe the population variation seen in medical images. This provides a natural way to tackle the Big Data problem of human variability in both normal and diseased states.

For rapid innovation

Image analysis is crucial to our customers but is not necessarily their area of primary expertise. Imorphics has years of experience in rapidly producing and delivering quality image analysis solutions.

"Since its inception, Imorphics has always challenged the traditional customized method of producing image analysis solutions. Our machine vision technology unlocks the true information potential of 3D medical images."

Mike Bowes PhD, Snr Director - Clinical Applications

About Us

Imorphics was founded in 2002 to commercialize and advance the 3D shape modeling technologies that were developed by the University of Manchester in the 1990s. The company attracted a team of exceptional scientist and engineers from the university department who now make up our core R&D team.

Between 2002 and 2005, Imorphics specialized in the completion and validation of **machine learning technologies** required to both **rapidly and accurately build 3D models of shape and appearance**; and to effectively use these models in the **precise and reproducible segmentation and description of objects within 3D medical images.**

By 2006, the company began to **deliver imaging biomarkers for pharmaceutical clinical trials**, in particular, for trials in osteoarthritis and rheumatoid arthritis. This capability was soon recognized in the orthopedics and image-guided surgical industries which has led to our expansion into delivering high quality solutions for **population analysis, prosthesis design, 3D image-guidance for neuro- and orthopedic surgery,** and also **3D planning for robotic surgery**.

Imorphics has **won all four of the prestigious Medical Image Computing and Computer Assisted Intervention Society (MICCAI) conference annual competitions that they have participated in**. These were for the segmentation of knee bone and cartilage in 2010 (SKI10), of the prostate in 2012 (PROMISE 12), of a raft of abdominal organs in 2014 (VISCERAL) and of head & neck CT images in 2015 (Head & Neck); all against leading commercial and academic groups. The VISCERAL competition was particularly challenging and included segmentation of liver, lungs, psoas muscles, kidneys and the aorta.

We are Good Clinical Practice (GCP) compliant and offer our clinical trials customers the assurance of years of experience on everything from exploratory studies to Phase III pivotal trials.

Since being acquired by Stryker in 2016, Imorphics continues to offer their statistical modeling technology for third parties, reinforced by their team of experts with decades of experience in delivering this revolutionary technology as effective real-world image analysis solutions. The team is still based in Manchester, UK and works closely with customers to develop pragmatic project plans so that informed go/no-go project decisions can be made at key stages.

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