

Internet Resources of

**Computer Aided Surgery**

Since 1997

English ➡	<a href="#">Top</a>	<a href="#">Research and Products</a>	<a href="#">Conferences</a>	<a href="#">News</a>	<a href="#">References</a>
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<http://homepage2.nifty.com/cas/>**Computer Aided Surgery: Researches and Products**
 [TXT-formatted summary](#) for PDA users

Last Updated: 2004/03/05

Index	Legend	
<a href="#">Research Institutes</a> <a href="#">(US and Canada/ Europe/ Japan/ Other countries)</a> <a href="#">Products</a>	2D or 3D visualization of medical images	<b>Visualization</b>
	Surgical simulation software	<b>Planning</b>
	VR based surgical simulators	<b>Simulator</b>
	Surgical tools, such as surgical robots	<b>Treatment</b>
	Surgical navigation systems	<b>Navigation</b>
	Systems for surgical education and training	<b>Education</b>
	Unclassified	<b>Others</b>

**US/Canada****Carnegie Mellon University**

Medical Robotics and Computer Assisted Surgery

<http://www.mrcas.ri.cmu.edu/index.html>

A joint research group for MR&amp;CAS, including surgical robotics for orthopaedics, image overlay for telemedicine.

Pla Tre

**Center for Advanced Information Processing (CAIP)**

Human-Machine Interface Lab

<http://www.caip.rutgers.edu/vrlab/index.html>

Medical application of Virtual Reality (especially force feedback). Several good movies are here.

Sim **NEW!****Georgetown University Medical Center**

Computer Assisted Interventions and Medical Robotics (CAIMR)

<http://www.visualization.georgetown.edu/>

"The objective of the CAIMR Group is to develop physician-assist systems for precision placement and manipulation of surgical instruments. Current areas of interest include image-guided spine and body interventions, surgical simulation, and prostate biopsy visualization. We work closely with physicians at the Medical Center to integrate new technology into clinical practice and are actively pursuing several related research projects. "

Vis Sim Tre **NEW!****Georgia Institute of Technology**

Graphics Visualization &amp; Usability Center

<http://www.cc.gatech.edu/gvu/>

Research in Virtual Environments and Real-time Deformations for Surgery Simulation. Some movies are available.

Pla

**Georgia Institute of Technology**

Interactive Media Technology Center

<http://www.oip.gatech.edu/imtc/html/medicine.html>

Force and tactile feedback for surgery. Interactive surgical simulation and tactile devices in eye surgery, endoscopic surgery and remote palpation.	Pla
<b>Harvard Medical School</b>	
Surgical Planning Lab.	
<a href="http://splweb.bwh.harvard.edu:8000/">http://splweb.bwh.harvard.edu:8000/</a>	
Wide variety of research in CAS, including image-guided therapy, registration, image processing of MRI, and Harvard Brain Atlas.	Vis Pla Nav
<b>Johns Hopkins University</b>	
CISST (Computer Integrated Surgical Systems and Technology)	
<a href="http://cisstweb.cs.jhu.edu/web/">http://cisstweb.cs.jhu.edu/web/</a>	
Computer-integrated surgical (CIS) systems, including surgical CAD/CAM and surgical assistants (intraoperative planning). Directed by Prof. Russell H. Taylor.	Pla Tre Nav
<b>Massachusetts Institute of Technology</b>	
Artificial Intelligence Lab.	
<a href="http://www.ai.mit.edu/">http://www.ai.mit.edu/</a>	
Image-guided surgery with Harvard Medical School.	Pla
<b>Mayo Clinic</b>	
Biomedical Imaging Resource	
<a href="http://www.mayo.edu/bir/home.html">http://www.mayo.edu/bir/home.html</a>	
Famous software ALANALYZE(TM) is developed here, by Dr. Richard A. Robb. VRASP (Virtual Reality Assisted Surgical Planning) is their new project for surgical planning and rehearsal, based on ANALYZE(TM).	Pla Tre
<b>NASA JPL</b>	
Robot Assisted Microsurgery	
<a href="http://robotics.jpl.nasa.gov/tasks/rams/homepage.html">http://robotics.jpl.nasa.gov/tasks/rams/homepage.html</a>	
6-DOF master-slave manipulator for microsurgery.	Tre
<b>New York University</b>	
Department of Neurology	
<a href="http://mcns10.med.nyu.edu/index.html">http://mcns10.med.nyu.edu/index.html</a>	
Computer-assisted stereotactic neurosurgery. Dr. Patrick J. Kelly (was at Mayo Clinic) is here now.	
<b>Northwestern University</b>	
Laboratory for Intelligent Mechanical Systems	
<a href="http://lims.mech.northwestern.edu/projects/surgery/">http://lims.mech.northwestern.edu/projects/surgery/</a>	
Registration in surgical robots for spinal pedicle screw placement.	Pla Oth
<b>Ohio Supercomputer Center</b>	
Biomedical Applications Research Initiative	
<a href="http://www.osc.edu/Biomed/">http://www.osc.edu/Biomed/</a>	
Three-dimensional display of skull base and heart, virtual simulation of regional anesthesia etc.	Vis Pla
<b>Stanford University Medical Center</b>	
National Biocomputation Center	
<a href="http://biocomp.stanford.edu">http://biocomp.stanford.edu</a>	
NBC has various projects in visualization, surgical simulation and planning.	Vis Pla Sim
<b>State University of New York at Stony Brook</b>	
Department of Computer Science	
<a href="http://www.cs.sunysb.edu/">http://www.cs.sunysb.edu/</a>	
Visualization Lab. develops a visualization library VolVis. 3D Virtual Colonoscopy is one of its application.	Vis

**The Cleveland Clinic Foundation**

Department of Neurological Surgery Research

<http://www.clevelandclinic.org/neurosurgery/2ndlevel/physician/research/camis/index.htm>

Computer-assisted minimally invasive surgery (CAMIS) system. Intraoperative 3D MRI using ViewPoint and Outlook MRI. A joint effort with Picker International. Grant from NASA.

Vis Tre Oth

**University of California at Berkeley**

Medical Robotics

<http://robotics.eecs.berkeley.edu/~mcenk/medical/>

Surgical robots as laparoscopic manipulators and endoscopic manipulators.

Tre

**University of Chicago**

Departments of Neurosurgery

<http://surgery.uchicago.edu/Neurosurgery/>Frameless Stereotaxy with Real-time Tracking of Patient Head  
Frameless Stereotaxy with Real-time Tracking of Patient Head  
Pixsys.

Nav

**University of Colorado Health Science Center**

Center for Human Simulation

<http://www.uchsc.edu/sm/chs/>

As an primary contractor of the Visible Human Project, they created the Visible Human Male and Female datasets. 3D images of the datases are also available.

Vis

**University of Pennsylvania**

Medical Image Processing Group

<http://mipgsun.mipg.upenn.edu/>

3D medical image visualization and its application, such as 3DVIEWNIX. Prof. J. K. Udupa is here.

Vis Pla

**University of Pittsburgh**

Department of Neurosurgery

<http://www.neurosurgery.pitt.edu/>

Image guided gamma knife simulation.

Pla **NEW!****University of Washington**

Human Interface Technology Laboratory (HIT Lab)

<http://www.hitl.washington.edu/>

VR based surgical simulation for endoscopic sinus surgery, as Medical Interface Projects.

Pla Sim

[Page Top](#)**Europe****Aachen University of Technology**

Surgical Therapy Technology Research Group

<http://www.bia.rwth-aachen.de/research/cht/indexE.html>

Surgical Technology Lab has a research projects in surgical robotics, medical virtual reality etc. They also have interest in the safety of surgical robots and ergonomics in surgery.

Tre Oth **NEW!****Bayerisches Forschungszentrum fur Wissensbasierte Systeme**

CARS 98 Project

<http://wwwradig.informatik.tu-muenchen.de/forschung/cars98/cars98.html>

Surgical simulation for robotic orthopaedic surgery, and planning of radiosurgery	Pla
<b>caesar</b> Research Triplet - Computer Aided Surgery	
<a href="http://www.caesar.de/english/index/research_in_triplets_b.html">http://www.caesar.de/english/index/research_in_triplets_b.html</a>	
Three research groups (Surgical Systems Laboratory Group, Holography and Laser Technology Group and Rapid Prototyping Group) cover the various aspects of CAS. I found lots of their presentation in CARS2001.	Vis Pla Sim <b>NEW!</b>
<b>Charite HU-Berlin</b> Surgical Robotics Lab	
<a href="http://www.charite.de/rv/mkg/srl">http://www.charite.de/rv/mkg/srl</a>	
Navigation supported intra-operative CT, markerless registration, computer-aided treatment planning, robots for instrument guidance, for maxillo-, craniofacial, plastic and reconstructive surgery.	Pla Tre Nav
<b>Grenoble Institute of Information and Applied Mathematics</b> Computer Assisted Surgery and Medicine Team	
<a href="http://www-timc.imag.fr/gmcao/">http://www-timc.imag.fr/gmcao/</a>	
All pages are written in French... Wide spread of researches, from 3-D image processing, surgical simulation to surgical robots. PADyC is a "passive robot" (that means, the robot itself never moves unless the assistance of surgeons).	Vis Pla Sim Tre Oth
<b>Imperial College: Department of Mechanical Engineering</b> Mechatronics in Medicine Laboratory	
<a href="http://www.me.ic.ac.uk/case/mim/">http://www.me.ic.ac.uk/case/mim/</a>	
"Research at the Department of Mechanical Engineering at Imperial College culminated, in 1991, in a "World First" with the demonstration of robotic prostate surgery. This robot was the first to actively remove tissue from a human patient in an operating theatre. More recently, Imperial College has created a spin-out company to exploit research results in orthopaedic robotic surgery - The Acrobot Company Ltd ( <a href="http://www.acrobot.co.uk">www.acrobot.co.uk</a> ). A vast list of products is planned and the first Acrobot(tm) (AcroPlan and AcroKnee) entered clinical trials in June 2001."	Tre <b>NEW!</b>
<b>INRIA</b> EPIDAURE project	
<a href="http://www.inria.fr/Equipes/EPIDAURE-eng.html">http://www.inria.fr/Equipes/EPIDAURE-eng.html</a>	
The goal is to develop new tools to analyze medical images for diagnosis, therapy and surgical operation simulation.	Vis Pla Sim
<b>INRIA</b> CHIR: Surgery, Computer Science and Robotics	
<a href="http://www-sop.inria.fr/chir/">http://www-sop.inria.fr/chir/</a>	
Chir is a project of the French National Institute INRIA. We work on numerous fields of Computer aided surgery, such as modeling of deformable organs, planning and simulation of robotic procedures, stereo vision, enhanced reality, safe software integration... The main application is totally endoscopic coronary artery bypass grafting using the da Vinci Robotic System from Intuitive Surgical. (text by Olivier Bantiche)	Pla Tre Nav <b>NEW!</b>
<b>King's College London</b> Computational Imaging Science Group (CISG)	
<a href="http://www-ipg.umds.ac.uk/cisg/index.htm">http://www-ipg.umds.ac.uk/cisg/index.htm</a>	
Image registration, image-guided surgery and a tele-surgery system "MIDSTEP" (Multimedia Interactive DemonStrator TElePresence).	Vis Tre Oth <b>NEW!</b>

## Swiss Federal Institute of Technology in Lausanne (EPFL)

Virtual Reality and Active Interfaces (VRAI) group

<http://vrai-group.epfl.ch/>

They are investigating 3D model reconstruction (CT, MRI, etc.), 3D model update from intra-operative data and fusion with preoperative data, and 3D intra-operative positioning techniques using augmented reality (video with graphical overlays and haptic feedback). This is a part of Swiss national project for COmputer aided and image guided MEdical interventions ([CO-ME](#)).

Tre Edu **NEW!**

## Technical University of Berlin

Computer Assisted Medicine

<http://cg.cs.tu-berlin.de/>

Computer aided diagnosis, therapy and 3D navigation.

Vis Sim Nav **NEW!**

## The University of Hull

Hull Medical Engineering Centre

[http://www.hull.ac.uk/courses/pg/pg\\_comp\\_sci\\_sim\\_and\\_visual.html](http://www.hull.ac.uk/courses/pg/pg_comp_sci_sim_and_visual.html)

Surgical planning and computer guided cannula, using trajectory tactician (a kind of 3D digitizing arm), for hip joint surgery.

Pla Nav **NEW!**

## United Medical & Dental Schools

Computational Imaging Science Group

<http://www-ipg.umds.ac.uk/cisg/>

Image fusion (CT, MR and MRA) for skull base surgery. Organ deformation assessment.

Pla

## University of Rennes 1

IDM Lab

<http://idm.univ-rennes1.fr/indexgb.html>

"Our main topics concerns image guided neurosurgery from planning to surgery (Visualization, Planning, Simulator, Treatment, Navigation and Education)."

Vis Pla **NEW!**

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## Japan

### Chukyo University

School of Computer and Cognitive Sciences, Hasegawa Laboratory

<http://www.hasegawa.sccs.chukyo-u.ac.jp/index.html>

3D simulation and visualization of human motion, and computer aided diagnosis from 3D CT images.

Vis Edu **NEW!**

### Keio University School of Medicine

Department of Plastic Surgery

<http://www.prs.med.keio.ac.jp/>

Simulation of plastic surgery, and laser lithography modeling. Only a publication list is available.

Pla Sim

### Kyoto University

Department of Medical Informatics

<http://www.kuhp.kyoto-u.ac.jp/Official/medinfo/>

(No English page available) Knowledge DB, XML for clinical use, simulation for hospital management, hospital information system, VR simulation, and tele-robotic surgery systems.

Pla Sim Tre **NEW!**

### Kyushu University

CAMIT (Center for Integration of Advanced Medicine, Life Science and Innovative Technology)

<a href="http://www.camit.org/english/index.html">http://www.camit.org/english/index.html</a>	
Development of surgical robotic systems	Tre Edu <b>NEW!</b>
<b>Nagoya University</b>	
Dept.of Eng., Biomedical Micro System Engineering Lab. (Ikuta Lab.)	
<a href="http://biomicro.ikuta.mech.nagoya-u.ac.jp/~ikuta/">http://biomicro.ikuta.mech.nagoya-u.ac.jp/~ikuta/</a>	
In the field of mechanics for CAS, it is one of the famous laboratory in Japan. Medical microactuator and micro-biomechanics are the ones of their projects.	Tre Edu
<b>Nagoya University</b>	
Dept. of Information Engineering, Murase Laboratory	
<a href="http://www.murase.nuie.nagoya-u.ac.jp/">http://www.murase.nuie.nagoya-u.ac.jp/</a>	
Computer aided diagnosis and simulation. Former Toriwaki Lab.	Vis Pla <b>NEW!</b>
<b>Nagoya University</b>	
Graduate School of Infomation Science, Suenaga Laboratory	
<a href="http://www.suenaga.cse.nagoya-u.ac.jp/index.en">http://www.suenaga.cse.nagoya-u.ac.jp/index.en</a>	
Medical image processing, including virtual endoscope system.	Vis Pla <b>NEW!</b>
<b>National Institute of Advanced Industrial Science and Technology (AIST)</b>	
Surgical Assist Technology Group	
<a href="http://unit.aist.go.jp/humanbiomed/surgical/index.html">http://unit.aist.go.jp/humanbiomed/surgical/index.html</a>	
Wide variety of CAS researches, including surgical robots, soft tissue deformation, medical imaging, MR compatibility, surgical navigation and human-machine interaction for surgery. AIST is the new and largest national institute in Japan, established in 2001.	Vis Tre Nav Edu Oth <b>NEW!</b>
<b>Osaka University</b>	
Division of Interdisciplinary Image Analysis	
<a href="http://www.image.med.osaka-u.ac.jp/">http://www.image.med.osaka-u.ac.jp/</a>	
Medical application of image processing, such as Computer-aided osteotomy and 3D measurement for thickness of hip joint cartilage.	Vis Pla Oth
<b>Tokai University</b>	
Dept. of Informatics and Communication Technology, Sutou Lab.	
<a href="http://sutou.fc.u-tokai.ac.jp/">http://sutou.fc.u-tokai.ac.jp/</a>	
Medical image processing and three-dimensional visualization in Dr. Sutou's laboratory. Mostly written in Japanese.	Vis
<b>Tokyo Denki University</b>	
Dept. of Life Sciences and Engineering, Advanced Therapeutic engineering Laboratory	
<a href="http://www.atl.b.dendai.ac.jp/lab">http://www.atl.b.dendai.ac.jp/lab</a>	
Main research topics of our lab are 'medical image processing', 'medical image visualization' and 'medical mechatronics system (robot)'. Especially we're focusing on developing 'intelligent devices for catheter guidance for neurosurgery and orthopediac surgery' and 'Image overlay guidance for interventional MRI and interventional X-ray CT' to realize Minimally Invasive Therapy.	Vis Nav
<b>Tokyo Women's Medical University</b>	
Faculty of Advanced Techno-Surgery	
<a href="http://www.twmu.ac.jp/ABMES/FATS/">http://www.twmu.ac.jp/ABMES/FATS/</a>	
"In our faculty, we research and develop technologies which improve the safety of surgery. ... To achieve them, we are trying to develop new technology that assists surgery in cooperation between staff from industries, universities, and government, under the idea of Medical/Engineering Cooperation and Speed & Innovation." (from website)	Vis Pla Tre Nav <b>NEW!</b>

**University of Tokyo**

Dept. of Eng., Networked Manufacturing Lab. (Mitsuishi Lab.)

<http://www.nml.t.u-tokyo.ac.jp/index.html>

Tele-micro-surgery system (no english text available). They succeeded to control a slave manipulator in Okayama (700 km west of Tokyo) from Tokyo.

Tre

**University of Tokyo**

Dept. of Eng., Nakamura-Okada Laboratory

<http://www.ynl.t.u-tokyo.ac.jp/index.html>

Medical robots, such as a manipulator for endoscopic surgery.

Tre **NEW!****University of Tokyo**

Dept. of Environmental Studies, Biomedical Precision Engineering Laboratory

[http://bme.pe.u-tokyo.ac.jp/index\\_e.html](http://bme.pe.u-tokyo.ac.jp/index_e.html)

Three-dimensional image reconstruction, surgical simulation, intraoperative surgical navigation, surgical robots.

Vis Pla Sim Tre Nav **NEW!****University of Tokyo**

Advanced Therapeutic and Rehabilitation Engineering Laboratory

<http://www.atre.t.u-tokyo.ac.jp/>

A new laboratory of Computer Aided Surgery and welfare technology in University of Tokyo, established in 2001. English page is under construction.

Vis Pla Sim Tre Nav **NEW!**[Page Top](#)**Other****Hebrew University of Jerusalem**

Institute of Computer Science

<http://www.cs.huji.ac.il/>

Simulations for total hip replacement surgery, image-guided bone fracture surgery.

Pla

**University of Auckland**

The Bioengineering Institute

<http://www.esc.auckland.ac.nz/Groups/Bioengineering/>

Cardiac data analysis, three-dimensional reconstruction of organs, and mathematical modeling. New project of Virtual Eye Surgery, with McGill University in Montreal. A lot of images and movies.

Vis Pla Sim **NEW!**[Page Top](#)**Products****The names of actual companies and products mentioned herein may be the trademarks of their respective owners.****(former) Computer Motion**

ZEUS, AESOP

<http://www.computermotion.com/>

A Company for development and selling medical robotic devices. AESOP 1000 is an interactive positioning system of laparoscope. ZEUS(tm) is a minimal invasive surgery robot, mainly for cardiac surgery. It was merged into Intuitive Surgical, in June 30, 2003.

Tre **NEW!****AnalyzeDirect.com, Inc.**

ANALYZE

	<a href="http://www.analyzedirect.com">http://www.analyzedirect.com</a>
A famous visualization software developed by Mayo Foundation. Tcl/Tk enhanced version 8.0 is released. AVW, a library of imaging functions is available.	Vis
<b>Armstrong Healthcare Limited</b> PathFinder, EndoAssist	
	<a href="http://www.armstrong-healthcare.com/">http://www.armstrong-healthcare.com/</a>
PathFinder is designed to place a surgical instrument at a chosen target in the brain. EndoAssist holds a conventional laparoscopic telescope and camera and moves it in response to intuitive head movements made by the user.	Nav
<b>Artma Medizintechnik GmbH</b> ARTMA Virtual patient	
	<a href="http://www.artma.com/">http://www.artma.com/</a>
Endoscopic navigation system and telesurgery with ARTMA (Advanced Real Time Motion Analysis) Virtual Patient Technology (R).	Sim Nav
<b>Boston Dynamics, Inc.</b> Surgical Simulation with Force Feedback	
	<a href="http://www.bdi.com/">http://www.bdi.com/</a>
<u>A surgical simulator</u> with real-time force feedback and 3D graphics.	Sim
<b>Carl Zeiss</b> OPMI Neuro, MKM	
	<a href="http://www.zeiss.de/">http://www.zeiss.de/</a>
<u>OPMI Neuro</u> is a surgical microscope with image-guided navigation function. Infrared position sensor (FlashPoint, I think) is used. Current focal point and the targets are superimposed on its view. Zeiss's another image-guided microscope, <u>MKM</u> , is a so-called robotic microscope. Too big and heavy.	Nav
<b>Cedara Software (former I.S.G. Technologies Inc.)</b> Imaging Application Platform	
	<a href="http://www.cedara.com/">http://www.cedara.com/</a>
Cedara's Imaging Application Platform (IAP) is a complete software development environment for the creation of powerful high-performance medical imaging application products. Cedara complements customers' in-house development, creating healthcare application products.	Vis Pla
<b>Given Imaging Ltd.</b> M2A	
	<a href="http://www.givenimaging.com/">http://www.givenimaging.com/</a>
M2A is a swallowable video capsule for use in diagnosing disorders. It has received CE-Mark, but not been cleared for the use in US.	Oth <b>NEW!</b>
<b>Hitachi Ltd. (Hitachi Hybrid Network Co., Ltd.)</b> Naviot (MTLP-1)	
	<a href="http://www.hitachi-hybrid.co.jp/">http://www.hitachi-hybrid.co.jp/</a>
Naviot is Japan's first surgical assist robot that received the Approval of Medical Devices by MHLW (Ministry of Health, Labour and Welfare Japan). It is an endoscopic navigation robot developed with Tokyo University and Kyushu University. No English page available.	Nav <b>NEW!</b>
<b>Immersion</b> Virtual Laparoscopic Interface	
	<a href="http://www.immerse.com/">http://www.immerse.com/</a>

Known as their products of 3D digitizing hardware and force feedback hardware, <a href="#">laparoscopic surgical simulators</a> are developed.	Sim
<b>Implant Logic Systems</b>	
Compu-Guide Surgical Template System	
<a href="http://www.implantlogic.com/">http://www.implantlogic.com/</a>	
"We manufacture custom computer-milled surgical guides for oral implant surgeries from CT-based dental implant planning tools."	Tre <b>NEW!</b>
<b>Integrated Surgical Systems</b>	
Robodoc, Orthodoc, NeuroMate	
<a href="http://www.robodoc.com/">http://www.robodoc.com/</a>	
Robodoc is the world's first commercialized robotic surgery system, developed by Prof. Russell H. Taylor (formerly IBM). It creates an exact implant cavity in the patient femur during Total Hip Arthroplasty (THA). Over 6000 cases has been done by this system (July 2000). Orthodoc is a pre-surgical planning software for THA. NeuroMate is a computer-controlled, image-directed robotic assistant for stereotactic neurosurgery.	Pla Tre
<b>Intuitive Surgical, Inc.</b>	
da Vinci Surgical System	
<a href="http://www.intuitivesurgical.com/">http://www.intuitivesurgical.com/</a>	
Their micro-surgery robot, da Vinci Surgical System, has received FDA approval in June 1999. Over 250 operations has been done using da Vinci, mainly in cardiac procedures. In 2003, it has merged with Computer Motion.	Tre <b>NEW!</b>
<b>Khoral Research, Inc.</b>	
Khoros	
<a href="http://www.khoral.com/">http://www.khoral.com/</a>	
Three-dimensional visualization software for medical images.	Vis
<b>Medtronic Sofamor Danek</b>	
StealthStation, ViewScope, Insight, Viewing Wand, SurgiScope, SonoNav	
<a href="http://www.sofamordanek.com/">http://www.sofamordanek.com/</a>	
A leading company of image-guided surgery system. StealthStation is a best-selling navigation system (70% in US market) for neuro, ENT and spinal surgery. One of its module, SonoNav, provides real-time ultrasound images correlated with MR or CT images. As of March 15, 2000, customer's support of Elekta's former image-guided surgery products, including ViewScope (a Leica's surgical microscope with infrared pointing device), Insight (a navigation software for ViewScope), Viewing Wand (an articulated arm for navigation) and SurgiScope (a ceiling-mounted robotic tool support system) are transferred to Medtronic.	Nav
<b>Mizuho Ltd.</b>	
NeuroNavigator	
<a href="http://www.mizuho.co.jp/main/products-item2.html">http://www.mizuho.co.jp/main/products-item2.html</a>	
NeuroNavigator is an articulated-arm navigator for neurosurgery, developed with Dr. Eiju Watanabe at Tokyo Metropolitan Police Hospital. Japanese pages only.	Nav
<b>RF SYSTEMlab.</b>	
NORIKA3, NORIKA Jr., NOKKO1	
<a href="http://www.rfnorika.com/">http://www.rfnorika.com/</a>	
NORIKA3, NORIKA Jr. and NOKKO1 are 'capsule' endoscope, with external wireless controller. NORIKA Jr. is smaller version, and NOKKO1 is for fetal treatment.	Tre <b>NEW!</b>

## Shimadzu

CANS Navigator

<http://www.shimadzu.com/>

A frameless, armless neurosurgical navigator developed with Osaka University Medical School. Electromagnetic position sensor (maybe it is Fastrak sensor by Polhemus) is used.

Nav

## The MIT AI Lab and the SPL at BWH

3D Slicer

<http://www.slicer.org>

The 3D Slicer is freely available, open-source software for visualization, registration, segmentation, and quantification of medical data.

Vis Pla

## Volume Interactions

Dextroscope, VizDexter

<http://www.volumeinteractions.com>

Dextroscope is a 3D input device with augmented reality technology, and VizDexter is a general purpose interaction software run on Dextroscope. Medicine is one of the major applications of them.

Vis Sim

Webmaster:

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