

I N T E L L I G E N T V I S I O N



Braintech is a recognized leader in the field of machine vision and robot guidance.

Braintech's vision software and technology create products in vision recognition and robot guidance to enhance processes in manufacturing, logistics, material handling, automation, situational awareness, security and reconnaissance and edutainment, just to name a few. The eVisionFactory and Volts-IQ platforms are robust, scaleable and transferable software products that are used for Industrial, Government and Defense and Consumer and Service applications. eVisionFactory, features the Henry Ford Technology award-winning Single Camera 3D VGR technology. With a customer list that includes global powerhouses Ford, Toyota, General Motors, Johnson & Johnson and Battelle Memorial Institute, Braintech's software is being utilized every second in every day with mission critical installations on over 150 robots in diverse applications around the world.

Braintech (OTC BB: BRHI) has been a publicly traded company since 1994, and has offices in Michigan, Washington DC and Vancouver, Canada.

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eVisionFactory™

eVisionFactory (eVF™) is a software platform for Vision Guided Robotics. With eVF users create scalable, robust robot systems from the same reliable software platform. The packaged 3D vision guidance software platform enables engineers, system integrators and process design engineers to build vision guidance systems with less effort.

Robot Vision Technologies

eVF includes the following configurable technologies for robot guidance:

Xi2D™ Single or Multi camera 2D information in 3 degrees of freedom (x, y, Rz)

IDM2.5D™ Single Camera information in 4 degrees of freedom (x, y, z, Rz)

SC3D™ Single camera 3D information in full six degrees of freedom for rigid parts (x, y, z, Rx, Ry, Rz) Resilient to noise and imperfect object appearance through advanced feature qualification technology. Efficient use of space on end-of-arm-tooling units. Extremely fast training and calibration cycles



DD3D™ Direct depth 3D imaging with multiple cameras looking at the same feature from stereo configuration.

SR3D™ Surround 3D imaging combines information from multiple cameras viewing large parts from different viewpoints (e.g. car bodies). 3D position of parts in full six degrees of freedom

SL3D™ Projects structured light (e.g. laser) light onto the surface of smooth, rigid parts. The light provides features for 3D positional calculations using a single camera.

Random Bin Picking (RBP™)

- Handling of parts from fully random bins opens a new frontier for robotic automation.
- **Special features of RBP:**
 - Robust Object Recognition uses advanced geometric pattern match to identify potential parts
 - "Intelligent Candidate Selection uses part position, overlap, interference and match confidence to choose candidates for collision free handling.

- Dynamic Path Planning to plan a collision free path to pick parts
- Dynamic Grasp Planning to grasp parts in a stable and safe manner

Automated Setup & Testing Functions

In addition to its ready-to-go vision technologies, eVF includes functions that simplify installation and testing of new and existing systems.

Accutest™

- Automatic evaluation of system performance during development and run-time.
- Creates significant development and labor savings.

AutoCal3D™

- Consistent 3D camera calibration in just 5 minutes

AutoTrain™

- Automatically measures parts for new systems
- Eliminates the need for CAD models and manual measurements



Volts-IQ



VOLTS-IQ delivers high-performance robot vision capabilities based on Microsoft Robotics Studio (MSRS) service-based architecture. Using VOLTS-IQ SDK, researchers, commercial product developers and hobbyists can “vision-enable” their robotic projects and products with unprecedented ease and speed.

Visit www.volts-iq.com to view demos and download the SDK, free today.

Volts-IQ Services

iSpot™ Server is a high level vision server capable of receiving images from one or more cameras and analyzing these to provide visual intelligence from the scene to robots or other intelligent systems. iSpot Server contains a number of Spotters™ each focused on extracting a distinct form of visual intelligence from images. Examples of Spotters include:

Object Spotter recognizes pre-trained objects in images and transmits their ID to external system)

Face Spotter detects and recognizes human faces

Motion Spotter detects motion and measures speed and direction



Target Spotter detects and locates a pre-defined target for target tracking applications

Color Spotter detects and locates areas of image featuring a pre-defined color

BlueVision™ Camera is compact, low power consumption, wireless digital camera intended for mobile robotic and other intelligent applications. The camera provides snapshots or video streams by capturing, digitizing and transmitting data over a robust Bluetooth™ wireless link. When used in conjunction with the iSpot Server, images from the camera can be analyzed to provide visual intelligence to robots and other devices.

The Vi line of Services (Visual Intelligence):

Vi FaceDetector A face detection service. Can detect multiple faces in a single camera stream. Can inform other services of face detections, including location and size.

Vi MotionDetector A motion detection service. Segments motion from a camera stream. Can detect multiple motion regions at once. Can inform other services of detected motion.

Vi Tracker A real-time target tracking service. Web dashboard enables easy target training. Makes target position and orientation information available to other services. Optimized for speed.

Vi ObjectDetector An object detection service. Objects can be recognized from single viewpoints. Can detect multiple object types at once. Makes target position, orientation and scale information available to other services. Optimized for reliability.

Vi MultiviewObjectDetector An object detection service. Objects can be recognized from multiple viewpoints. Can detect multiple object types at once. Makes target position information available to other services. Optimized for reliability.

Vi-VLM™ Visual Localization and Mapping Vi-VLM uses images from a stereoscopic sensor to map indoor environments as well as to recognize the location of the sensor within the map. Vi-VLM uses inexpensive solid state imaging sensors and relies on sophisticated mapping algorithms to accomplish its mission. The result is a smaller, less power consuming, more reliable and less expensive localization and mapping capability based on the widely available CMOS or CCD imaging technologies.

Vi WebCam A high-performance webcam service. Provides video and image feeds to other MSRS services. Compatible with most USB cameras.

Vi IPCamera An improved IP camera service for internet-based cameras. Supports both JPEG and Motion JPEG formats, enables higher frame rates.

Markets and Applications



Industrial

Braintech provides a vision guided robotic software platform for industrial applications for the automotive, general manufacturing, materials handling and inspection markets through its eVisionFactory™ (eVF) software. As a software platform, eVF provides a suite of tools and VGR technologies for engineers and developers to build reliable and scalable robust solutions.

Applications include:

- Random Bin Picking
- Inventory Organization and Management
- Motion Detection
- Moving-line Part Tracking and Handling
- Material Handling and Assembly
- Part Inspection
- Part Transfer
- Code Reading
- Seam Sealing
- Palletizing and De-palletizing
- Racking and De-racking



Consumer & Service

Braintech's software development kit, VOLTS-IQ™, adds advanced vision technology to Microsoft Robotics Studio. Volts-IQ addresses a vision market need for hobbyists, educators and home appliance manufacturers. Along with the cleaning market, edutainment is a wide-open arena for all age groups to engage in the use of vision-guided robotics.

Applications Include:

- Edutainment
- Toys
- Robotic Surgery (3.5m U.S. procedures possible)
- Healthcare (home health aid)
- Facility Maintenance
- Facility Surveillance and Security
- Health Care & Recovery Companions



Government & Defense

Braintech's experience with mission critical industrial vision technology and its dedicated research and development group, with over 151 years of expertise, ideally positions the company to develop additional government and defense applications.

Applications include:

- Logistics & Hazardous Material Handling
- Military Supply Chain: Bin Picking, Palletizing, De-palletizing
- Armament Assembly and Management
- Armed Services Depot Automation
- "Reset" Replacement and Repair
- Explosive Ordinance Disposal (EOD)
- Vision for Unmanned Vehicles (Air, Land and Sea)
- Combat Vehicle Situational Awareness
- Face Recognition, Motion Detection, Gun Slewing
- Intelligent Reconnaissance Alarms & Warnings
- Surveillance

