



# Random Bin Picking

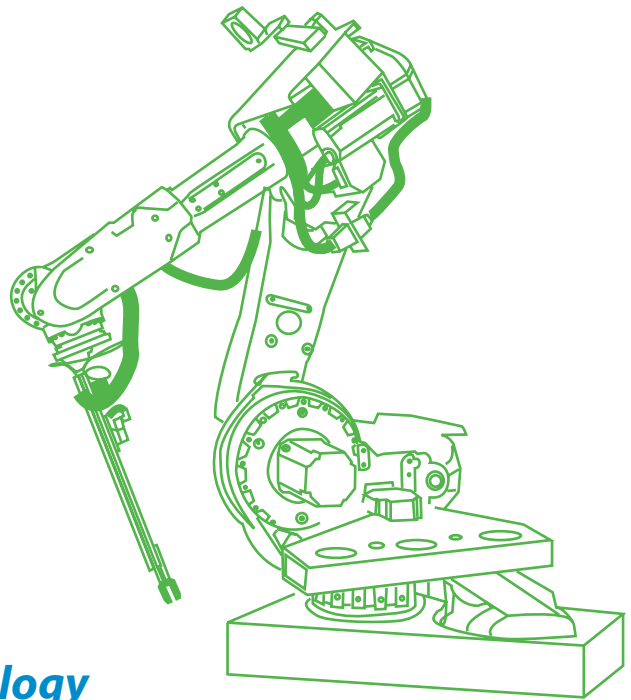




# Intelligent Material Handling for Automotive and General Industries

RBP™ is an advanced eVisionFactory™ (eVF™) Vision Guided Robotic (VGR) technology solution for random bin picking.

Integrated with eVF's other VGR technologies—including award-winning SC3D™—RBP enables detection, location and grasping of randomly situated parts from generic bins.



## Technology

**RBP is a break through in VGR technology. It overcomes the challenges of automating systems to locate and move parts randomly placed in generic bins. Such challenges include:**

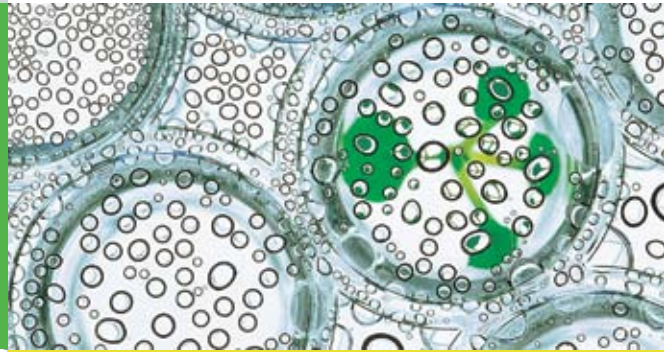
- Extreme part overlap and occlusion.
- Significant lighting variability and shadowing.
- Shortage of distinct features on parts.
- Collisions avoidance with other parts, tools and bins.

**RBP works by combining Braintech's uniquely developed capabilities, including:**

- Advanced geometric pattern matching, for robust part candidate recognition.
- Fast range data analysis, for efficient and accurate location of parts in three dimensions.
- Dynamic candidate scoring, for finding the best part candidates to grasp.
- Dynamic interference detection, to prevent collisions and provide optimal grasping.



Advanced geometric pattern matching for part recognition



## Features

RBP features unique abilities that increase robustness, flexibility and intelligence in VGR systems. RBP technology offers:

- **Multi Part Candidate Tracking** - to offer a choice of identified pick-able parts.
- **Pick Candidate Re-verification** - to enable efficient re-use of identified parts from previous pick cycles.
- **Multi Grasp Point Selection** - to provide multiple grasping points and scenarios for a given part, while also increasing speed and accuracy when grasping each part.
- **Advanced 3D Range Data Analysis** - to confidently move to and grasp parts without collisions.

## Benefits

RBP technology provides the opportunity for significant cost savings and benefits, such as:

- **Profits** increase with faster productivity, reduced capital costs and less down time.
- **Quality** increases with reduced manufacturing error.
- **Capital and maintenance costs** are reduced by implementing generic, sustainable hardware. Part-specific custom containers and custom transport mechanisms are no longer needed.
- **Labor costs** are reduced by reallocating labor positions.
- **Higher value positions** are created for skilled development and management of robotic systems, with less chance ergonomic injury.
- **Less time** is wasted on trial and error testing, and more time is invested running faster, flexible and scalable systems.



Braintech, Inc. (BRHI:OTCBB) is a recognized leader in the field of Vision Guided Robotics. Partnered with industrial giant ABB Robotics, the company develops innovative vision technologies for the automotive and general industries markets. Now a partner with Microsoft, Braintech has also branded a new suite of vision technologies designed for the service robotics markets.

Braintech's industrial product, eVisionFactory and its award winning SC3D technology, is installed in plants for GM, Ford, Chrysler, Toyota, Honda and Porsche. VOLTS-IQ™ SDK, is Braintech's product for the fast growing service robot industry. It is designed to work with Microsoft Robotics Studio with an early focus to provide vision technology for the highly popular 'edutainment' robots and robot construction kits, such as the Lego Mindstorms NXT. Headquartered in Vancouver, Canada, with offices in Detroit, Michigan and the technology corridor of Northern Virginia, Braintech has been a public company since 1994.

eVF, eVisionFactory, SC3D and RBP are trademarks of Braintech Inc., and all its subsidiaries. All other registered trademarks are the property of their respective owners. eVF Patent Number US 6,816,755, RBP is Patent Pending.

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#### Software

- eVisionFactory 5.1 Software Studio for VGR
- RBP Functional Package for eVF
- Microsoft Windows XP operating system

#### Hardware

- Quad Core PC, 2.4GHz, 2GB RAM
- Diffuse ambient lighting source
- Point Grey Research Stereo Camera Sensor

#### Optimal Part Types

- 3D geometry
- Dull surface finish
- Semi-planar with 2-3 resting positions
- Examples: castings, forgings, plastic injection molded parts

#### Part Recognition Performance

- Average cycle time to recognize and verify a part for picking: 10 seconds
- Positional accuracy: +/-1mm