

EasyVBAI

USER GUIDE

Rev 1.4

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1. Introduction

EasyVBAI is a Add-On for NI VBAI which offers simple, effective User Interface (UI) for image processing scripts developed in VBAI. As the name suggests, it allows *easy* to configure UI so that the system developer can focus on VBAI script rather than the UI components.

It also allows for *easy* to maintain system where image processing script is decoupled from the EasyVBAI UI. Also, user gets to decide which of the VBAI test step results to use for overall test result to show on the UI.

2. System Requirements

2.1 Hardware Requirement

- Processor Intel i3 and above or equivalent
- RAM minimum 4GB
- 100 MB Free Space on Hard Disk

2.2 Software Requirement

Make sure EasyVBAI and all its dependencies are installed. For more details on installation please refer to the installation guide.

- Follow the EasyVBAI Installer guide. C:\Program Files (x86)\Easy VBAI\Documentation\EasyVBAI Installer Guide.pdf

*User has to install all required softwares before running the application.



3. Getting Started

Double click on the Easy VBAI.exe shortcut on the desktop or the file located in Program Files (x86) >> Easy VBAI folder



OR



Software will launch and splash screen will be displayed during software initialization.



I (I)

• Files and Folders

Sr.no	Folders	
1	Documentation	Contains User Manual and Documents for help.
2	Examples	Contains VBAI examples for reference.

Table 1



3.1 Working procedure

• Launch the EasyVBAI_1.4.exe



- It will take few seconds to set up after which splash screen will appear.
- When launching application for the first time, **Preferences** window will open on screen for initial configuration..
- Enter the password to login. (default password is admin). Click on **Signup settings** button to change the password. Make sure to run the application as Administrator.



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Old Password
New Password
Confirm Password

• After successful login, Preferences window will appear on screen as shown below.

	PREFERENCES	Signup Settings
 Acquire Image Locate Remote Set Coordinate System 	VBAI Path C:\Program Files (x86\Ex Texture Defects Example.v	amples\Detect /bai Browse
 Detect Texture Defects Set Inspection Status 1 	EASY VBAI	Log File Name
Verlay Results	LogImage Trigger Timeout	LogFile
×××	5000	
×××	_	
× ×		
× × ×		



Sr.no	Settings	
1	VBAI Path	Select VBAI script to set the configuration.
2	Application Name	Set the custom application name to display on UI
3	Log files	Set the log Image and file name in VBAI script.
4	Trigger timeout	Set the trigger time in Trigger running mode.
Table 2		

•	Selected VBAI script steps name will appear in list on the left side in the preferences
	window.

• User can Select/Deselect the steps in VBAI script to show in results.



- Once all the required information is entered, 'SAVE' button will get enabled.
- After pressing 'SAVE' button, all the entered information will get stored in the VBAI configuration file which has the same name as the VBAI script and preference window will get closed.
- Similarly, for every new VBAI script user has to create the configuration file using Preference tool.
- The Main application will process the VBAI script and show the results on the user interface. A VBAI script having acquire image step will show the snapped



image on the main user interface. (Ref. User Interface)

- If user changes the VBAI script or adds any new steps in the VBAI then software will give a pop up window to update the same VBAI configuration file and then it will use the latest file for processing and display the results.
- User can set the operating mode of software by setting a Trigger timeout value using Preferences tool. During processing, if the software doesn't get the trigger from either hardware or software within specified timeout interval, the software will give a pop up window to allow user to select Trigger Mode or Manual Mode for Processing.
- In Trigger mode 'Execute' button will be disabled.



Figure 1: Mode Selection dialog

• In Trigger Mode the software will automatically do the processing repeatedly in specified timeout interval and Abort button will get enabled.



Figure 2: Abort Button

• In Manual Mode, user has to click on 'Execute' button on UI to start the processing.



Figure 3: Execute Button

• In manual mode, user can change the mode of Inspection after pressing **Select Mode** Button.



Figure 4: Select Mode Button

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4. User Interface

S Easy VBAI	×
Application	Cutomer Logo
	Inspection Script Detect Texture Defects Step Name Result
Renote Control Inspection Defect Area = 0.0 mm^2 Defect Area = 0.0 mm/2 Defect Area = 0.0	Step Name Result Locate Remote Image: Complex System Set Coordinate System Image: Complex System Detect Texture Defects Image: Complex System Overlay Results Image: Complex System Image: Complex System Image: Complex System Image: Complex System

Figure 5: User Interface

• The GUI screen resizes automatically according to display resolution of the monitor. User doesn't have to resize the UI manually. **The basic display resolution is 1024x768.**





Figure 5.1: User Interface

- 1. Vendor Logo: User Selectable Vendor Logo
- 2. Preferences: User can modify the configuration file for current VBAI script.
- 3. Log Viewer: Display log images and log files.
- 4. Abort/Execute button: Display Abort or Execute button as per selected mode.
- 5. Select Mode: Allows user to select Trigger or Manual Mode.
- 6. App Name & Version: Display application name and version.
- 7. About: Display info related to application.
- 8. **Help:** Display User manual for reference.
- 9. Customer Logo: User Selectable Customer Logo.
- 10. Current VBAI Inspection: Display current vbai script name under inspection.
- 11. **Result Display:** Display VBAI step results with PASS/FAIL indication.



5. Examples and Tutorials

 First step is to create a VBAI script as per the application requirements. Open the example vbai script at C:\Program Files (x86)\Easy VBAI\Examples\ Count Pixels Example.vbai in NI Vision builder 2014 SP1

🜄 NI Vision Builder Al (32-bit) - Configuration - Count Pixels Example.vbai	– o ×
File Edit View Operate Tools Help	
≛ ≝ ⊌ ୭ ୨ ନ₁, 2 →1 ⋧ →× ■ ♀ Ⅱ ५० 몇 │ ∞ ∞	?
Count Pixels Example	^
Yield: 0.00 %	Start
Flep Dicence	End V
Part Coordinate Sustem	Inspection Steps: Use Additional Tools III *** file ************************************
	Display Image: Displays the current image.
640×480 0.95X 222 (0.0) < >	Delay: Waits a specified number of milliseconds, or delays for fixed time lapse period.
State: Inspect	Data Logging: Log inspection results to a file on the local hard drive or to a remote FTP server.
	Image Logging: Log inspection images to file on the local hard drive or to a remote FTP server.
Image: Center Part Write Protection Set Inspection Status Overlay Results Display Image 1	Read/Write Variables to INI File: Reads or writes Variables, Ethernet/IP Assemblies, and Modbus Tables to an INI file.
# Matches = 1 Percentage = 7.44 % Inspection Status=Fail Percentage too high. FAIL	User Input: Allows users to input strings, numbers, and true/false responses from a custom dialog.

Figure 6 : Example

- 2) Make sure that the VBAI script runs without any error in Vision builder. Save the script and exit the Vision builder software.
- 3) Launch the EasyVBAI_1.4.exe from desktop shortcut. (Make sure to **Run as Administrator**)

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- 4) It will take few seconds to set up and splash screen will appear on user interface.
- 5) To setup the VBAI configuration for the first time, the **Preferences** window will open on screen.

	PRE	EFERENCES	Signu	p Settings
×		VBAI Path		
×		Application	Name	Browse
×		Log Image N	lame	Log File Name
×	O Login	Enter password	×	Image
×		Password		
×	ОК	Cancel		
×				
×				
×			SAVE	

Figure 7: Preferences

- 6) Enter the password to login. (default password is **admin**)
- 7) After successful login, user can set the VBAI configuration. Refer **Table 2** on **Page 8**.

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	PREFERENCE	S 🖉	Signup Settings
X Simulate Acquisition	^ VBAI Pa	ath	
✓ Locate Part Left Edge	C:\Prog Exampl	ram Files (x86)\Ea es\Count Pixels Ex	sy VBAI\ ample.vbai
✓ Part Coordinate System	Applica	tion Name	biowse
🗸 Flap Distance	Applica	EASY VBA	Version
K Flap Distance 2	Log Im	age Name	Log File Name
🗸 Flap In Place	LogIm	age	LogFile
Center Part	Triana	Thursday	
Write Protection	5000	Timeout	
Set Inspection Status			
Voverlay Results	_		
Display Image 1	_		
	_		
	_		
<u> </u>			
$\hat{\mathbf{v}}$		SAVE	
<u>^</u>			

Figure 8. VBAI Configuration Settings

8) Click on VBAI Path browse button to select vbai script at C:\Program Files (x86)\Easy VBAI\Examples\ Count Pixels Example.vbai

9) To save the inspection report and images first user has to create two system variables in Vision builder. The variables should be defined as **LOGFILE** and **LOGIMAGE**. This step is related to two tools in Vision builder as shown below.



Inspect	ion Steps: Use Additional Tools	
KE (🔈 💠 🛛 🏏 🛍	Ŷ
	Display Image: Displays the current image.	Â
•	Delay: Waits a specified number of milliseconds, or delays for fixed time lapse period.	ļ
	Data Logging: Log inspection results to a file on the local hard drive or to a remote FTP server.	
s S	Image Logging: Log inspection images to file on the local hard drive or to a remote FTP server.	
)	Read/Write Variables to INI File: Reads or writes Variables, Ethernet/IP Assemblies, and Modbus Tables to an INI file.	1
87	User Input: Allows users to input strings, numbers, and true/false responses from a custom dialog.	
**** * ***	Update Inspection UI: Updates the interface in Inspection mode.	
P	Select Inspection: Changes the inspection based on the value of I/O lines, variables, or measurement results.	~

Figure 9: Report logging in VBAI

2. Create system variables in Vision Builder as shown below.

nspection Variables	System Variables	Network V	ariables				
lser-Defined System	Variables						
Name		Туре	Initial Value	Network Shared	# Uses	^	Add
LOGFILE		String	Log		0		Edit
LOGIMAGE		String	Log		0		Luit
Timeout		Numeric	0		0		Delete

Figure 10: Variable Manager in VBAI



3. Data Logging Step in Vision builder as shown below.

tep Name			
Data Logging 1			
Measurements Logged	Destination		
Log Location	Log to Local Drive		
Local Path	C:\Program Files (x86)\Easy VBAI\Logs		
		Select LOGFILE Variable to save file.	
File Name	User-Defined System	✓ Log as a Background Task	
Log Settings			
File Type	Tab Delimited Text File (*.txt)	Substitute on Fail \00	
() Single File		have (a)	
O Multiple Files	Start a New File Every 1	nour(s)	
Overwrite any f	ile(s) created prior to this inspection before log	ging data	ОК
. Folder is Read (Dnly		Cancol

Figure 11: Data logging step settings in VBAI

4. Image Logging steps in Vision builder AI

State	Step that Created Image	File Path		Log Limit	Format
nspect	Simulate Acquisition	C:\Program File	es (x86)\Easy VBAI\Logs\Log	100	JPEG
Enable Image Log Location Folder Path C:\Program	e Logging - Inspect Simulate Acquent Log to Local Drive		File Format Options File Format JPEG - F	ile Interchange Form	at 🗸
File Name User-Defin	ned System	Select LOGIM variable	AGE	indge gabier	
	Timestamp ☑ Log as a Bac	kground Task	Log Image Only When Insp	ection Status Fails ed Images	~



Figure 12: Image logging step settings in VBAI

- 10. Enter the filename and image name in **Log File name** and **Log Image name** fields to save reports in Logs Folder.
- 11. Set the application name and version in **Application Name & Version** field.

12. Trigger Timeout

- 1. Make sure to create **"Timeout"** system variable in vision builder first as shown in Figure 10.
- 2. Set the time (milliseconds) for the inspection to wait to get the trigger signal either from hardware device or software trigger. If the software doesn't get the trigger in the specified timeout then it will show a pop up to select the mode of operation. Refer to Figure 4 on Page 12.
- 13. VBAI script steps name will appear in list on the left side in the preferences window. User can Select/Deselect steps as per Table3 on page 8.
- 14. After setting all the fields "**SAVE**" button will get enabled and all the configuration settings will get stored for the selected VBAI file and Preferences window will get closed.
- 15. For every new VBAI script user has to create a configuration file first through Preferences window.
- 16. After completing all the settings EASY VBAI software will show the pop up to select the mode.
- 17. If User selects Trigger Mode then software will process automatically.

18. In Trigger Mode, all the controls on UI will be disabled. Press **"Abort"** button to stop the

Inspection.



- 19. To change mode of operation press "**Select Mode**" button.
- 20. If User selects Manual Mode then user has to click on "Execute" button to do the processing.

Edsy VDAI	
Applicatio	on
<u>م</u>	Inspection Script Count Pixels Example
	Step Name Result
Count Pixels Example FAIL	Simulate Acquisition
Yield: 58.43 % Flap Not In Place	Locate Part Left Edge
Flap Distance	Part Coordinate System
	Flap Distance
CenterPart	Flap Distance 2
	Flap In Place
	Center Part
	Write Protection
	Set Inspection Status
Part Coordinate System Disk Write Protected	Overlay Results

Figure 13: Trigger Mode UI

• User can click on the image display to zoom in. To zoom out use **SHIFT + Mouse** (Left click) to bring it back to initial size or to resize it.



S Easy VBAI)
		Cutomer Logo
<u>م</u>	Inspection Script Count Pixels	Example
	Step Name	Result
Count Pixels Example PASS	Simulate Acquisition	
Yield: 50.00 %	Locate Part Left Edge	
Flop Distonce	Part Coordinate System	
	Flap Distance	
	Flap Distance 2	
	Flap In Place	
	Center Part	
	Write Protection	
	Set Inspection Status	
Part Coordinate System	Overlay Results	

Figure 14: Manual Mode UI

- 20. To change the vendor logo and customer logo user has to save the logos at C:\Program Data\Easy VBAI\Logos folder.
 - 1. Make sure to save vendor logo name as Vendor.jpg , customer logo as Customer.jpg
- 21. Logs Viewer Click on this button to view the inspection log files and images.





22. Select **VIEW LOGS** to view the reports as shown in the image.



Figure 15. Logs Viewer

23. Help Window - Click on "Help" button to view the User manual and Reference documents.



24. About Window - Click on "About" button to view the application details.







- About window show "Application Name" and "Version" configured in Preferences.
 'V' prefix is for version number.
- To **Exit** the application user has to select the manual mode. In manual mode, the application '**Cross**' button is enabled. Here is the screenshot.



• In Trigger mode, the application '**Cross**' button is disabled.

vbai		'Cross' (Exit Button) is diabled in Trigger Mode.	s r Logo
PASS	Inspection Script	Count Pixels Ex	ample
PASS	Step Nan	ne	Result

- **To exit the application**, user has to click on **Select mode button** (fig. 4 on page no. 9) then select manual mode, the Cross top-right (Exit button) is enabled to close the application.
- In Trigger Mode and Manual Mode application "**Minimize**" button will remain enabled for user to minimize the application to access other icons on the desktop.



6. Licensing Information

1. When using the application for the first time, Application will display the licensing information.

Terms Of Use.vi			×
		Ď	
SOFTWARE LICENSE AGREEMENT			^
Easy VBAI			
ARÁV Technologies.			
ALL OR ANY PORTION OF THE PRODUCT, INCLUD THAT YOU ACCEPT ALL THE TERMS AND CONDIT AGREEMENT IS ENFORCEABLE LIKE ANY WRITTEN THIS AGREEMENT, INCLUDING ALL ATTACHMENT EXCLUSIVE UNDERSTANDING BETWEEN US, AND S AGREEMENTS AND OTHER REPRESENTATIONS OR AGREEMENT IS ENFORCEABLE AGAINST YOU AND WHOSE BEHALF IT IS USED. IF YOU DO NOT AGRE	INGC ANY UPDATE THERET IONS OF THIS AGREEMENT NEGOTIATED AGREEMENT S AND EXHIBITS, CONSTIT UPFRSEDES ALL PRIOR SAL COMMUNICATIONS, WHE ANY LEGAL ENTITY THAT E, DO NOT INSTALL, DOWI	O, YOU AKNOWLEDG YOU AGREE THAT T SIGNED BY YOU. YO UTES THE COMPLETE ES PROPOSALS, NEG THER ORAL OR WRIT OBTAINED THE SOFT NLOAD NOR USE THIS	EAND AGREE THIS U AGREE THAT AND DTIATIONS, TEN. THIS WARE OR ON S SOFTWARE.
This Software License Agreement (the "Agreement' customer. In this Agreement, the customer will be referred to as "ARAV" or as "we", "us" and "our".	") is made by and between referred to as "you" and "yo	ARAV Technologies a our"; ARAV Technolog	nd you as the jies will be
WHEREAS, ARAV has developed and is willing to su materials known as the Fasy VBAL ("the Product") t	upply the computer softwar to you subject to the terms	e, documentation, and and conditions stated	d related herein:
Accept Terms of Use	Evaluate	Activate	Cancel

 Select Evaluate to run the software in Evaluation mode. The Evaluation version is of 100 trials for user to use the software and during every launch it will be displayed on the screen as a pop up dialog.



_			
	Application run	ning in Evaluation M	ode
	Activate	Continue Evaluat	ion
	-		

3. To Activate, click on Activate button. It will open the activation form as

shown in screenshots below. Customer has to enter the details Name, email etc.

- To get the "Serial No." customer has to contact us on our support email.
- Customer will get the serial number from us via email to enter into the field.
 (Ref. 1)
- Once all the details are filled, **Copy to Clipboard** button will get enabled and click on it to copy the details.(**Ref. 2**)
- Paste these details in notepad or any text editor and email us at license@aravsystems.com (Ref. 3)
- Customer will get the Activation Key via email from us to activate the software. (Ref. 4)
- Once received the activation key, enter it into the field & Activate button will get enabled.



Activation Window	\sim
	_
ARAV	
TECHNOLOGIES	
3	
Name*	
demo	1
Email*	-
demo@gmail.com]
Application Name	
Easy VBAI	1
1	1
123456789111111	1
	1
Installation ID	1
743603EC0000	
Copy to Clipboard	-
Activation Key*	_
Activate Exit	
Activation Window	\times
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_
ARAV	
TECHNOLOGIES	
3 TECHNOLOGIES	•
Data copied to clipboard	
Data copied to clipboard Send to license@aravsystems.com	
Data copied to clipboard Send to license@aravsystems.com Name* demo	
Data copied to clipboard Send to license@aravsystems.com Name* demo Email*	
Data copied to clipboard Send to license@aravsystems.com Name* demo Email* demo@gmail.com	
Data copied to clipboard Send to license@aravsystems.com Name* demo Email* demo@gmail.com Application Name	
Certification Name Certification	
Contraction Name	
Contraction Name Contraction	
Contraction Name	
Application Name Application Name Serial No.* 123456789111111 Installation ID 7A3603EC0000	
Application Name Careful No.* Careful No.*	
Activation Key*	
Copy to Clipboard Activation Key*	
Activation Key*	



7. Troubleshooting Techniques

- This section gives info related to all pop up dialogs EasyVBAI application show on UI if any error occured.
- 1. When NI VBAI 2014 SP1 is in evaluation mode it gives a pop up window every time when Easy VBAI splash screen appears on screen. It also displays number of evaluation days remaining and options for user to select. Options are like Launch Vision builder AI, Activate the product, etc.

NI Vision Builder Al	
	NATIONAL INSTRUMENTS
License Status Vision Builder AI Full-Featured Evaluation 6 days remaining	Inch Vision Builder AI Activate Products
Do not show this dalog again	Cancel

 If user selects launch Vision builder AI option, It will start the vision builder engine in the background. If the the splash screen remain open for long time and if it doesn't show preferences window or pop up window to select trigger mode or manual mode. This indicates that vision builder is not launched and it's possible that an error occurred in background. Easy VBAI application will give a pop up dialog to indicate the problem.



P _a	×
VBAI Unable to find specified VBAI 20 Check If LabVIEW API support a components are installed prope 2014. Please reboot PC and restart ap	014 session. Ind other erly for VBAI plication
ОК	

- Easy VBAI application requires that all the software dependencies are installed before running the application. User has to make sure that during NI Vision Builder AI installation, LabVIEW API support and other software components are installed as per the installer guide. **Make sure** to activate vision builder ai before the evaluation period get expired. Unactivated version will impact the performance of EasyVBAI application.
- 2. Easy VBAI application show a pop up dialog when the above mentioned software dependencies are not installed properly. The pop up dialog appears as shown in the below screenshot.

Þ.		\times
VBAI Unable to Op Please install support and o application p Reboot PC an	en Connection. VBAI 2014 with LabVIE other components to r operly d restart application	W API run
	ОК	

• This issue indicates that during vision builder 2014 sp1 installation LabVIEW API support and other components could not installed properly. To solve this problem user has to installed VBAI 2014 SP1 as per the installation procedure given in the Easy VBAI Installer guide.



3. To change the login password using **Signup Settings** in preferences, run application as administrator. It gives a pop up dialog as shown below.

		×
Run Easy VBAI Applicat	tion as Administrator to chang	ge the password.
	ОК	

4. If Vision builder AI 2014 Sp1 is not installed and User runs the Easy VBAI application, it shows pop up dialog on screen.

D _a		
NI V Plea http built sp1/	ision Builder 2014 se install from thi ://www.ni.com/d der-for-automate '5235/en/	SP1 is not installed. s link ownload/ni-vision- d-inspection-2014-

• Click on Download button, to open the link.

5. Make sure that VBAI script runs without any error in vision builder AI. As this affects the working of EasyVBAI application.

• For eg. Consider a vbai script made using image processing blocks available in vision builder ai.





It uses Acquire Image (1394, USB..) function to acquire real time image from camera connected to PC. If the camera is disconnected or if there is a problem with the hardware connection, this function gets disabled as it couldn't find the camera device connected. While running script, It will give an error and this affects the other image processing steps as shown in the following screenshots. (Ref. Additional Software Details section in Installer guide.)

) 1" is not) 1" could not	^
	~
	1" is not 1" could not



• Easy VBAI application gives a pop up dialog on screen while opening above script having error.



9		×
VBAI Unable to Open Please check VE	vBAI script BAI script and restart a	pplication

- User has to make sure first that the vbai script used for inspection, runs without any error in vision builder AI software before using it in Easy VBAI application.
- If the existing vbai script configured in Easy VBAI application has changed (If user has modified the vbai script or added any additional image processing steps etc.)
- Easy VBAI application gives a pop up dialog to indicate that the existing vbai script has changed.

Part -	>
VBAI script conten	ts are different.

- Click Launch Preferences, to configure the vbai script.
- 6. After the evaluation period is expired (max 100 trails), It gives following dialog on UI to user.



9		>
Evaluation e	xpired!! Please contact: info@ara	vtech.com or click 'Activate'
	Activisto	Exit
	ACTIVALE	
	Activate	

8. Support

For support, please email ARAV Technologies at info@aravtech.com

You can also reach us at the below mentioned number from 10:00 AM to 06:00 PM (IST) for any query or issues.

Contact details (Office) - +91- 8806002266 (India)



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