Robot Lite

ActiveX/COM

Developer Object

By

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Contents

Introduction

The RobotLite ActiveX is a plugin for Windows Development Platforms to easily integrate Applications seamlessly with Robot hardware (Servos, Motors, Sensors and Controllers). This development interface is unprecedented in the field of Robotics. This interface opens up the world of Robotics to a infinitely wider base of users and developers alike of which the creativity of the latter using this tool can achieve and surpass the expectations of the users in a much more pleasing time frame.

This document defines the Robot Lite Attributes categorized as follows:

- **Properties**
- **Methods**
- **Events**

Properties

Name
EnableCameraBufferEvent Return Boolean

Description
Enable CameraFillingBuffer event. Default is False

Name
Set_Camera_Manual_Baud Return Boolean

Description
Manually reset Baud Rate on Camera initialization. Default is False. ***Now Obsolete***

Name
Jpeg_Flip_Image_180 Return Boolean

Description
Flip the Camera Image 180 Deg , applicable when Jpeg_Active and Jpeg2BMP are True. Default is True

Name
Jpeg2BMP Return Boolean

Description
Convert Camera Image to BMP file format. Default is True

Name
CameraRawDataDelay Return Long

Description
Delay between Packets received from Camera. Default is 20ms

Name
Com_Connected Return String

Description
Shows status of Serial Connection. Default is 'Not Connected"

Name
RegKey Return String

Description
Registration Key. Default is 0

Name
HardwareKey Return String

Description
States the Hardware Signature of the Computer. Default is 1111-1111-1111-1111

Name
Camera_Resolution Return Integer

Description
Sets/Shows the Resolution [1,3,5,7,8,9,11,16,17]. Default is 3.

Name
Jpeg_Compression Return Integer

Description
Sets the Jpeg compression. Default is 8

Name
Jpeg_Packetsize Return Long

Description
Sets the size of the Jpeg Packet [256 to 2048]. Default is 256

Name
ImageRaw_Colour Return Integer

Description
Sets the Colour Bits for a Raw Image Capture [1,2,3,4,5,6] and Jpeg_Active is False. Default is 3

Name
Jpeg_Image_Archive Return Boolean

Description
If set to True will add Date/Time stamp to Image Filename. Default is False

Name
Jpeg_Snaphot_Method Return Boolean

Description
Sets the Image Capture to Snapshot protocol. Default is False

Name
BMP_Flip_Image_180 Return Boolean

Description
Flip the Camera Image 180 Deg , applicable when Jpeg_Active is False. Default is False

Name
Jpeg_Active Return Boolean

Description
If set to True will produce a Jpeg Image file. Default is True

Name
ComBaud Return Long

Description
Sets the Baud Rate for Serial connection. Default is 57600

Name
ComBaudStandard Return Long

Description
Shows the standard Baud Rate for the Buad entered in ComBaud connection. Default is 57600

Name
Company Return String

Description
States the Company Name. Default is Progwhiz By TrenMarDane

Name
Registered Return String

Description
States if the ActiveX is Registered [Yes,No]. Default is No

Name
ComSerialPort Return Integer

Description
Sets Serial Com Port [0 to 255]. Default is 0

Name

JoyPort Return Integer

Description

Sets the Joystick Port#. Default is 0

Name

JoyStatus Return Boolean

Description

States if the Joystick Initialised successfully. Default is False

Name

DetectObject Return Boolean

Description

Enable Object Detection and Tracking and corresponding Event ImageDetectionArrived. Default is False

Name

DetectXaxis Return Int

Description

Return X-Axis value [0 to DetectXSectors -1]. Default is -1

Name

DetectYaxis Return Int

Description

Return Y-Axis value [0 to DetectYSectors -1]. Default is -1

Name

Detect_Threshhold_Lower Return Int

Description

Set the lower detection variance. Default is 32

Name

Detect_Threshhold_Upper Return Int

Description

Set the upper detection variance. Default is 255

Name
DetectXSectors Return Int

Description
Set/Return the number of X Sectors. Default is 8

Name
DetectYSectors Return Int

Description
Set/Return the number of Y Sectors. Default is 8

Name
DetectionTotal Return Long

Description
Returns the number of Sectors that detected an Object. Default is 0

Name
DetectMaxThreshold Return Long

Description
Returns the Max Threshold reached by a foreign Object. Default is 0

Name
FilterAmbientLight Return Boolean

Description
Enable filter to compensate for Ambient light. Default is False

Name
ImageFilePath Return Char

Description
File Path where Camera images are saved. Default is current path Application is launched

Name
Version Return Long

Description
Returns the Version of RobotLite ActiveX

Name

CameraResetWithSpecial Return Boolean

Description

If set to True will use a Special Immediate Reset for internal Camera functions. Default = False

Name

CameraNewBaud Return Long

Description

Sets the new Baud Rate, will become active at next Serial Connect CameraBaud = CameraNewBaud

Name

ComBaudResetStandard Return Long

Description

Shows the proper Baud standard based on the value entered to CameraNewBaud

Name

CameraBaudResetOn Return Boolean

Description

If set to True will soft reset the Camera after a Baud Change. Default = False

Name

CameraOffifSyncFail Return Boolean

Description

If set to True will turn off the Camera after a Sync Failed before retrying Sync again

Name

CameraInitDebugOn Return Boolean

Description

If set to True will turn On Camera Debug Event CameraInitDebug

Name

PortCheckedType Return Char *

Description

Returns the Port Type of the last Port checked using CheckPortType

Name

CameraAdapterCustActive Return Boolean

Description

Used customized software interface Camera Adapter when set to True by using the customized camera properties. Jpeg_Packetsize, Jpeg_Compression, Jpeg_Active, Camera_Resolution and GetCameraImage parameters are inactive and these will have to be set explicitly using the customized properties message values. Default is False

Name

camera_sync_msg Return Char

Description

Camera customized message in Hexidecimal. Default is AA0D00000000

Name

camera_ack_sync_part_msg Return Char

Description

Camera customized message in Hexidecimal. Default is AA0E0D

Name

camera_reset_msg Return Char

Description

Camera customized message in Hexidecimal. Default is AA0800000000

Name

camera_ack_sync_msg Return Char

Description

Camera customized message in Hexidecimal. Default is AA0E0D000000

Name

camera_jpeg_comp_msg Return Char

Description

Camera customized message in Hexidecimal. Default is AA1008000000

Name
camera_init_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0100070303. Ensure that the ResData1 parameter in GetCameraImage and DetectCameraImage equate to the value representing the resolutions [01..17] as shown in Red

Name
camera_ack_init_part_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0E01

Name
camera_ack_init_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0E01000000

Name
camera_init_packet_size_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0608000800. Ensure that the Packetsize1 parameter in GetCameraImage and DetectCameraImage equate to the values using the LSB:MSB shown in Red

Name
camera_snapshot_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0500000000

Name
camera_get_pic_snap_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0401000000. Required

Name
camera_ack_jpegsize_part_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0A01

Name
camera_get_pic_jpg_preview_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0405000000. Required

Name
camera_get_pic_jpg_packet_prefix_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0E0000. Required

Name
camera_ack_getpic_jpg_part_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0A05

Name
camera_ack_jpeglastpacket_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0E000000AA

Name
camera_poweroff_msg Return Char

Description
Camera customized message in Hexidecimal. Default is AA0900000000

Name
RotateImageArray Return Int

Description
Camera Image is Rotated RotateImageArray Degrees and creates a BMP file. If RotateImageArray=0 then Image is unchanged(Default = 0). This supercedes RotateImage
N.B All Customised Camera Msg properties will be ignored or considered obsolete if left as empty or has value 'XX'. Unless stated as "Required"

Methods

Name
CloseComPort

Description
Close Com Port

Name
GetCameraImage(Int ResData1, Long Packetsize1, Int Jpegcompression1, Int ColourDepth1)

Description
Get Camera Image with ResData1=[1,3,5,7,8,9,11,16,17], PacketSize=[256 to 2048], ColourDepth1=[1 to 6] only applicable when Jpeg_Active = False, Jpegcompression1 =[0 to 9] use 8 as optimal and most compatible between camera modules

Name
GetSensor(Int port, Int devnum)

Description
Get Sensor Input from Port = [0 to 23], at Device = [0 to 127]

Name
JoyStart

Description
Start Joystick Listener

Name
JoyStop

Description
Stop Joystick Listener

Name
OpenComPort

Description
Open Com Port

Name
RunScriptParam(Int scriptnum, Int devnum, Int Param)

Description
Run Script with parameter 'Param' at particular Device

Name
RunScript(Int scriptnum, Int devnum)

Description
Run Script at particular Device

Name
SetServoPos(Int portnum, Int devnum, Long portval)

Description
Set Servo Position or turn on relay switch. Using (actual Servo position)/4 values

Name
SetMultiServoPos(Int devnum , Int servomax, Int startport, Long sp1, Long sp2, Long sp3, Long sp4, Long sp5, Long sp6, , Long sp7, Long sp8, Long sp9, Long sp10, Long sp11, Long sp12)

Description
Set Multiple Servos Positions in one asynchronous move instruction or turn on/off relay switch(s). servomax is the max number of servos to set [1 to 12],startport is the starting servo to move [0 to 23]. sp1 = servo position 1, .. sp12 = servo position 12. Using (actual Servo position)/4 values

Name
SetServoSpeed(Int portnum, Int devnum, Long portval)

Description
Set Servo Speed at Portnum

Name
StopScript(Int devnum)

Description
Stop All running scripts

Name
SetServoPosActual(Int portnum, Int devnum, Long portval)

Description
Set Servo Position or turn on relay switch using actual Servo position values

Name
DetectCameraImage(Int ResData1, Long Packetsize1,Int Jpegcompression1, Int ColourDepth1)

Description
Detect Object and return the coordinate in DetectXaxis and DetectYaxis properties. ResData1=[1,3,5,7,8,9,11,16,17], PacketSize=[256 to 2048], ColourDepth1=[1 to 6], Jpegcompression1 =[0 to 9] use 8 as optimal and most compatible between camera modules. This method is only applicable when either Jpeg_Active = False or Jpeg2Bmp must be True if Jpeg_Active = True. You must initiate GetCameraImage prior to calling this Method and DetectObject = True for this method to function

Name
DigitalZoom(Int SectorX, Int SectorY)

Description
The picture is divided up into 16 sectors and by selecting a coordinate by using SectorX=1 to 4 and SectorY=1 to 4 you can zoom in 16x into that particular Sector. You must capture an image where the resultant output is a BitMap prior to using this Method

DigitalZoomAdjust(Int SectorX, Int SectorY, Int Zoom)

Description
The picture is divided up into Zoom sectors and by selecting a coordinate by using SectorX=1 to $Zoom^{1/2}$ and SectorY=1 to $Zoom^{1/2}$ you can zoom in Zoom times into that particular Sector. You must capture an image where the resultant output is a BitMap prior to using this Method

Name
CameraSoftReset(Void)

Description
Reset Camera Machine State

Name
CameraHardReset(Void)

Description
Reset Camera Registers and Machine State. Reboots Camera

Name
CameraChangeBaud (Void)

Description
Apply new Camera Baud Rate entered in CameraNewBaud

Name
CheckDeviceAlive (Int devid)

Description
Check the particular devid to see if present

Name
RotateImage (Int Angle)

Description
Rotate Captured image by Angle(0 to 360) Degrees and fires RotateImage Event. Made obsolete to new property RotateImageArray which modifies the Image array and the rotated image is returned in the ImageDataArrived event

Name
ObjectDetectInSector (Int Xcoord, Int Ycoord) Return Boolean

Description
Return True if Object detected at the Coordinate. Xccord= 0 to DetectXSectors-1, Ycoord = 0 to DetectYSectors-1

Name
ObjectVarianceInSector (Int Xcoord, Int Ycoord) Return Long

Description
Return the Variance Threshold at the Coordinate. Xccord= 0 to DetectXSectors-1, Ycoord = 0 to DetectYSectors-1

Name
CameraTurnOff (void)

Description
Turn Off the Camera

Name
ResetController (void)

Description
Reset controller

Name
CheckPortType (Int devnum, Int portnum)

Description
Check the port type on a particular devnum and portnum on a controller and stores the porttype in PortCheckedType Property and fires PortTypeDetected Event

Name

SetDetectServoPos (Int Portnum ,Int devnum, Long Axispos,Long AxisMin, Long AxisMax,Long ServoNeutralpos, Long ServoMax)

Description

Set the Servo to the servo position detected by the Camera as entered in the Axispos axis single coordinate parameter.

Name

SetDetectServoPosActual (Int Portnum ,Int devnum, Long Axispos,Long AxisMin, Long AxisMax,Long ServoNeutralpos, Long ServoMax)

Description

Set the Servo to the actual servo position detected by the Camera as entered in the Axispos axis single coordinate parameter.

Name

ResetCameraCustMsgs (void)

Description

Reset Camera's Customised Message Properties

Events

Name
Event CameraFillingBuffer(Char bufferstream)

Description
Fires event after call GetCameraImage with EnableCameraBufferEvent set to True

Name
Event CameraFailed()

Description
Fires event when Camera Fails to respond

Name
Event ImageDataArrived(Char filename)

Description
Fires event when Image is complete

Name
Event SensorDataArrived(Int portval)

Description
Event fires when Sensor data arrives after using GetSensor

Name
Event JoyDataArrived(Long xaxis, Long yaxis, Long zaxis , Int button)

Description
Event fires after JoyStart when Joystick is moved or a Button is Pressed

Name
Event ImageDetectionArrived(int xaxis, int yaxis, Long ThreshMax, DetectedTotal Long)

Description
Event fires after DetectCameraImage . xaxis = 0 to DetectXSectors-1, yaxis = 0 to DetectYSectors-1

Name
Event DetectedObjectMovedToEvent (Long ServoPos)

Description
Event fires after SetDetectServoPos. moves the servo to the detected coordinate position

Name

Event DetectedObjectMovedToActualEvent (Long ServoPos)

Description

Event fires after SetDetectServoPos. moves the servo to the detected coordinate actual position

Name

Event DigitalZoomCompleted(Char FileName)

Description

Event fires after DigitalZoom or DigitalZoomAdjust is completed

Name

Event DigitalZoomStatus(Int StatusError , Char StatusMsg)

Description

Event fires after DigitalZoom or DigitalZoomAdjust is completed to give the status of a Zoom request

Name

Event CameraInitDebug(Char DebugString, Char Direction)

Description

Event fires when CameraInitDebugOn is set to True and will return the String Sent/Received shown in two digit Hexidecimal for each character returned

Name

Event RotateImageEvent(Char RotatedImageName)

Description

Event fires after RotateImage is completed to return the name of the rotated image. This event is redundant to the RotateImageArray property.

Name

Event PortTypeDetected (Int Portnum, Char PortType, Int PortTypeCode)

Description

Event fires after CheckPortType is completed to return the portnum, porttype and porttypecode(0,1,2). 0 is Port inactive, 1 is Servopower, 2 is Sensor

Name

Event CheckDeviceEvent (Int Devid, Int Errno, Char Errmsg)

Description

Event fires after CheckDeviceAlive is completed to return the Devid, Errno [0 – no error, 1 – error], Errmsg [Found, Not Found]

Motorised Kit Methods

The following Methods are to allow users to quickly interact with motorized kits, namely:

- Buggy Car
- Mini Tank

These Methods are not restricted in the UnRegistered mode.

Buggy Methods

Name
BuggyForward(Long Speed)

Description
Move Buggy Forward as Speed = 200 to 1000

Name
BuggyReverse (Long Speed)

Description
Move Buggy Reverse as Speed = 200 to 1000

Name
BuggyTurnRightF(Long Duration)

Description
Turn Buggy Forward Right at Duration in Millisec and stop

Name
BuggyTurnLeftF(Long Duration)

Description
Turn Buggy Forward Left at Duration in Millisec and stop

Name
BuggyTurnRightR(Long Duration)

Description
Turn Buggy Reverse Right at Duration in Millisec and stop

Name
BuggyTurnLeftR(Long Duration)

Description
Turn Buggy Reverse Left at Duration in Millisec and stop

Name
BuggyStop (Long tweakoffset)

Description
Stop Buggy. Tweakoffset = -500 to 500

Name

BuggyStopAutonomous ()

Description

Stop Autonmous

Name

BuggyStartAutonomous ()

Description

Start Auonomous

Name

AdvBuggyForward(Long Speed, Long neutralpos, Int devnum, Int port0)

Description

Move Buggy Forward as Speed = 200 to 1000, for e.g. neutralpos = 1500, devnum =12, port0 = 0

Name

AdvBuggyReverse (Long Speed, Long neutralpos, Int devnum, Int port0)

Description

Move Buggy Reverse as Speed = 200 to 1000, for e.g. neutralpos = 1500, devnum =12, port0 = 0

Name

AdvBuggyTurnRightF(Long Duration, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Turn Buggy Forward Right at Duration in Millisec and stop, for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvBuggyTurnLeftF(Long Duration, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Turn Buggy Forward Left at Duration in Millisec and stop, for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvBuggyTurnRightR(Long Duration, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Turn Buggy Reverse Right at Duration in Millisec and stop, for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvBuggyTurnLeftR(Long Duration, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Turn Buggy Reverse Left at Duration in Millisec and stop, for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvBuggyStop (Long tweakoffset)

Description

Stop Buggy. Tweakoffset = -500 to 500

Name

AdvBuggyStopAutonomous (Int devnum)

Description

Stop Autonmous

Name

AdvBuggyStartAutonomous (Int devnum)

Description

Start Auonomous

Tank Methods

Name
TankForward(Long Speed, Long Tweakoffset)

Description
Move Tank Forward as Speed = 200 to 1000. Tweakoffset = 0 to 500

Name
TankReverse (Long Speed, Long Tweakoffset)

Description
Move Tank Reverse as Speed = 200 to 1000. Tweakoffset = 0 to 500

Name
TankTurnRight (Long Duration)

Description
Turn Tank Right at Duration in Millisec and stop

Name
TankTurnLeft (Long Duration)

Description
Turn Tank Left at Duration in Millisec and stop

Name
TankStop (Long tweakoffset)

Description
Stop Tank. Tweakoffset = -500 to 500

Name
TankStopAutonomous ()

Description
Stop Autonomous

Name
TankStartAutonomous ()

Description
Start Autonomous

Name

AdvTankForward(Long Speed, Long Tweakoffset, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Move Tank Forward as Speed = 200 to 1000. Tweakoffset = 0 to 500
for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvTankReverse (Long Speed, Long Tweakoffset, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Move Tank Reverse as Speed = 200 to 1000. Tweakoffset = 0 to 500
for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvTankTurnRight (Long Duration, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Turn Tank Right at Duration in Millisec and stop
for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvTankTurnLeft (Long Duration, Long neutralpos, Int devnum, Int port0, Int port1)

Description

Turn Tank Left at Duration in Millisec and stop
for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvTankStop (Long tweakoffset, Long neutralpos ,Int devnum, Int port0, Int port1)

Description

Stop Tank. Tweakoffset = -500 to 500, for e.g. neutralpos = 1500, devnum =12, port0 = 0, port1 = 1

Name

AdvTankStopAutonomous (Int devnum)

Description

Stop Autonomous

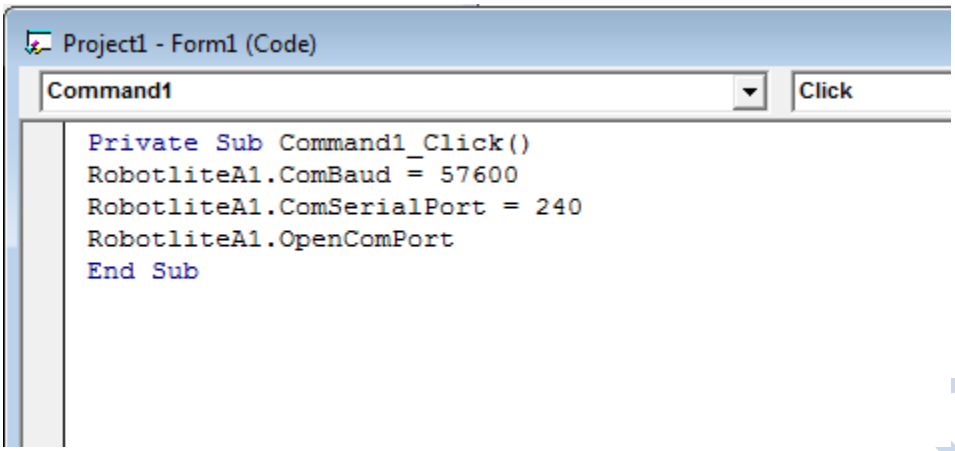
Name

AdvTankStartAutonomous (Int devnum)

Description

Start Autonomous

Startup Code Example



References

Demo Application

Demo Download Link

Installation

Installation Download Link