Forum8 World16 Workshop 2019 Presentation

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Create and Attach Sensor Model to Vehicle

S Mode	el Editor – 🗆 🗙	W	Model Ed	itor			-	□ ×
Model Movement POV-Ray Vehicle editor Laser Sensor		Model Movement POV-Ray Vehicle editor Laser Sensor						
Data Textures Light Sources Reference points		I : New Sensor	Add	Name :	New Sensor			
Model name			Сору	Installation Sit Relative F	te : Position :	Relative A	nale :	
SUV - White (old)			Delete	X:	0.000 m 😫	Yaw :	0.000 *	-
Model type			Enable All	Y:	2.000 m 😫	Pitch :	0.000 *	-
Venicies			Disable All	Z:	0.000 m 🖨	Roll :	0.000 *	-
Move origin X axis delta: 0.0000 m				Scan Range : Min Distar	: 		0.100 m	
Y axis delta: 0.0000 m				Max Dista	nce:		100.000 m	
Z axis delta: 0.0000 m				Upward V	'ertical View Angle :		0.000 *	
Center				Downwar	d Vertical View Angle :		14.000 °	*
Botate				Leftward H	Horizontal View Angle :		45.000 °	•
Rotate angle: 0.000°				Rightward	Horizontal View Angle :		45.000 °	-
Rotate X Rotate Y Rotate Z				Scan Resolut Vertical B	ion : esolution :		2.000 *	-
Scale by				Horizontal	Resolution :		1.000 °	÷
✓ X axis ✓ Y axis ✓ Z axis				Connection :				
1.00000 x Scale	\sim			Destinatio	n Address :		127.0.0.1	
	✓ Draw both sides of polygon			Destinatio	n Port :		5000	÷
	Day light			Texture S	ize :		512	~
	Model:			Frequency	y:		10 Hz	+
	X: 2.02 m (-1.01 ; 1.01) Y: 1.76 m (-0.01 ; 1.75) Z: 4.50 m (-0.01 ; 1.75)							
	2538 polygons (0 transparent polygons, 122 bloom polygons) 2779 vertices							
Test	6 parts with textures		Up					
	×		Down					
	OK Cancel Help				OK		Cancel	Help

Drive Vehicle in Environment and Transmit Scanning Device



Use Custom Schema and TCP Buffer to Organize Message Stream

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B Preview READ/VErnd The Transmission of the	
· UCWINKOS	
HUDBERM ISA OUTPUT DEBRICONCELE TERMINAL	
FO the binned pext messageLength=A83	
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received data length: 2821	
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	8	Starting Line Number		Long	unsigned	4	[1.(Resolution width)]			•
	9	Ending Line Number		Long	unsigned	4	[starting line number.(Resolution:Height)]			
	9a	Pixel color: Blue	0-255	Byte	unsigned	10				
	96	Pixel color: Green	0-255	Byte	unsigned	1				
	90	Pixel color: Red	0-255	Byte	unsigned	1	if it exceeds 8500 pixels data division occurs			
	10	Footer		footer		.4				

Lidar Message Schema 0x0301

No	Content	Unit	туре	Sign	Bytes	Notes
<u>_1</u>	Header		header		-4	
5	Message Type		short	unsigned	2	enum
3	Lidar Sensor Id		Byte	unsigned	1	id for each lidar sensor
4	Timestamp	seconds	Double	tigned	8	scanned time from plug-in communication start
5	Scan Number: Horizontal		Long	unsigned	4	number for each scan data, [1,*]
6	Scan Number: Vertical		Long	unsigned	-a	number per scan, [1,*]
7	Vertical Angle	radians	Single	tigned	4	
Ð	Start Horizontal Angle	radians	Single	rigned	4	horizontal angle of first point
9	Horizontal Resolution	radians	Single	signed	- A -	
10	Number of Points		Long	unsigned	4	
10.4	distance	meters	Single	tigned	4	
11	Footer		footer		.4	



Output in Separate Application for Algorithm Development



12.6. (5966) HBISHT 561.7m (dH 3.3m) 30° 19 455° h, 13° 53′ B.2° E - (448632, -55285.7) Traveled 0.09 of 3.12 km Road "Read 1° e, tane 1 - Speed 5 km/h (AT 0, gen 1, 433 SPM) | Manual mode - TTC(Setting) --- 1 - Speed (Setting) --- 1 - Speed 5 km/h

- Implement Reverse Vehicle Control Schema to allow vehicle input
- Implement Odometry readout from UC-win/Road
- Implement IMU readout from UC-win/Road
- Add (Gaussian) noise function to depth sensors in UC-win/Road
- Connect to SLAM Algorithm which supports limited sensor data
- Add multiple depth scanners to a model in UC-win/Road
- Implement color camera streams for vehicles that don't use Lidar
- Connect to ROS for more complex control mechanisms