UTC Project Information	
Project Title	Rendering of Dense, Point Cloud Data in a High Fidelity Driving Simulator
University	Oregon State University
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Funding Source(s) and Amounts Provided (by each agency or organization)	$40,000.00 (PacTrans); $40,000.00 (City of Portland)
Total Project Cost	$80,000.00
Agency ID or Contract Number	UW121A
Start and End Dates	Start Date: 07/01/2012 End Date: 06/30/2013
Brief Description of Research Project	• At this point we have evaluated approximately 6 different strategies for loading segments of point clouds into the simulator with varying results. The workflow for each strategy has been documented with flow charts. • We are in the process of constructing a benefit/cost analysis for each strategy that will provide guidance to labs around the world regarding best practices for point cloud modeling. Measures such as file size, processing time, etc. have been compiled for each strategy. • To expand the scale of these geo-specific environments we are creating hybrid environments composed of point clouds, TIN models, and computer generated geometry. Point clouds are being used to model real world objects with a complex shape such as trees and buildings (see figure 1). TIN models, based off the real-world scan data, are being explored for terrain modeling. Finally, computer generated geometry is be used to model new roadway configurations and new terrains. This will significantly reduce the file size and should allow for a drivable environment based on LIDAR scans of the built environment.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	The following figure is an example of the virtual worlds that have been designed in the simulator from dense point cloud data
Impacts/Benefits of Implementation (actual, not anticipated)	None as of yet
Web Links · Reports · Project website	Rendering Of Dense, Point Cloud Data In A High Fidelity Driving Simulator http://depts.washington.edu/pactrans/wp-content/uploads/2012/12/PacTrans-10-739437-Hurwitz-David-Small-Project.pdf