

# Research Report Summary

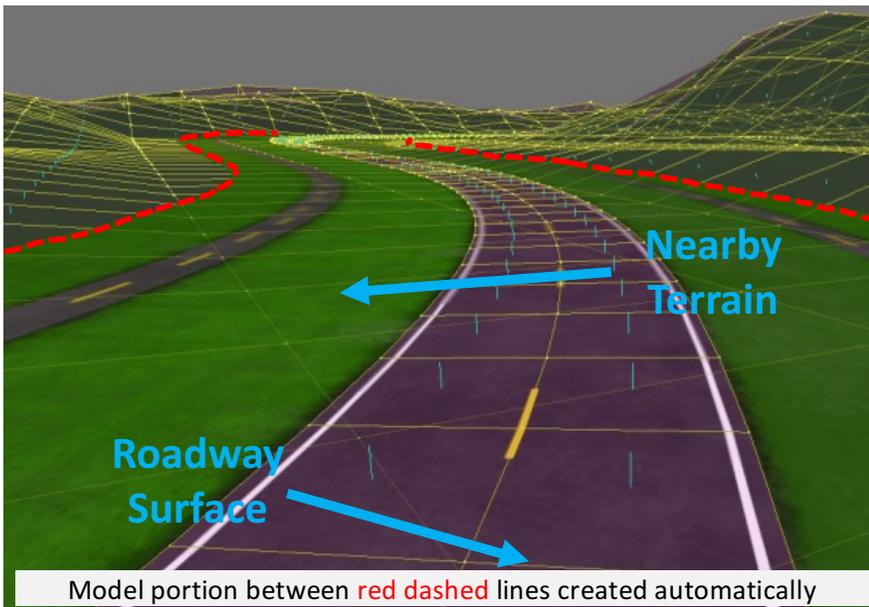


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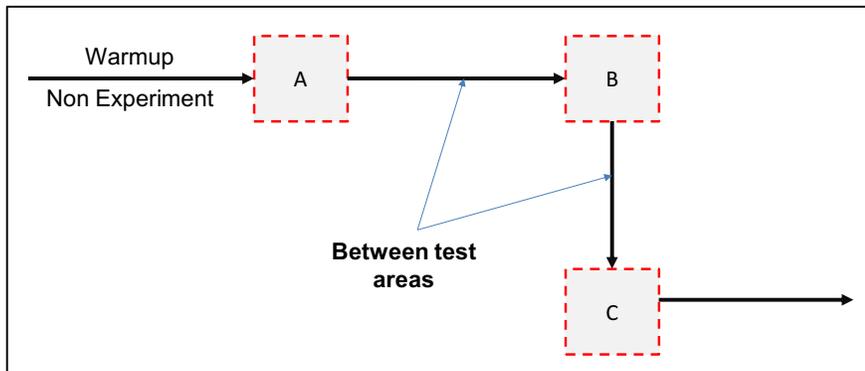
## Automated Road Segment Creation Process Streamlining the scenario-creation process

Scripts to streamline the scenario-creation process were developed in Python.

Scripts generate 3D road models used as a component of driving simulator scenarios.



Models produced by the scripts can reduce the burden of creating models for parts of a complete simulator experiment scenario that are simply connecting “test areas” where critical portions of the experiments take place.



## Input Data

	A	B	C
1	0	344.685	3.706
2	150	344.685	3.736
3	300	344.685	3.766
4	450	344.685	3.795
5	600	344.685	3.825
6	750	344.685	3.854
7	900	344.685	3.884
8	1050	344.685	3.914
9	1200	344.685	3.943

Models are created using the coordinates of lines that define the edge of the road.

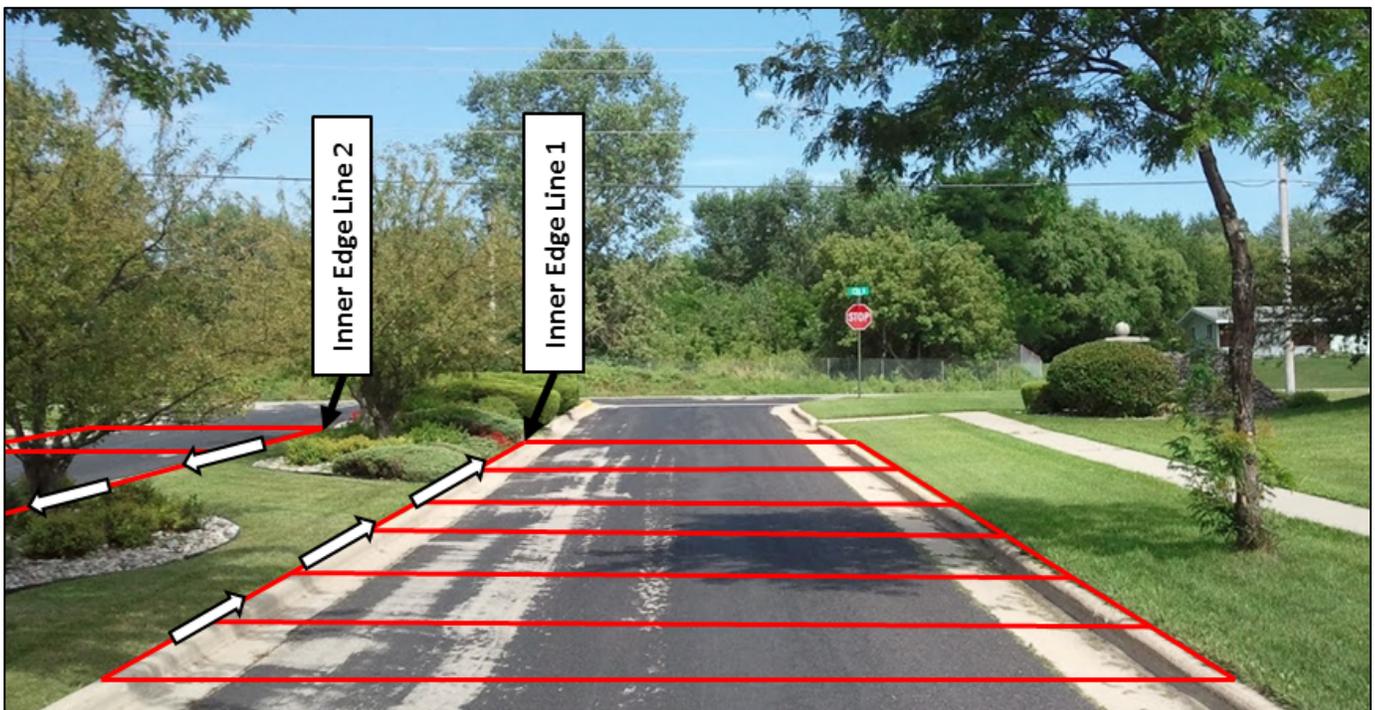
X, Y, and Z coordinates are read by the scripts from a CSV-style file.

Edge lines can be obtained by exporting data from CAD models and without the need to manipulate the model in specialized 3D authoring software.

*“Significant portions of the 3D modeling process can be automated via Python scripts, thus reducing the amount of time spent on scenario creation and corresponding training.”*

## Definition of Input Data

The figure below shows an example of a roadway and highlights some of the edges that need to be defined as part of the inputs required for the script. As the edges highlighted suggest, lines required for the script input are those lines typically included in a top-view representation of the model, including those that are masked by lines with a higher elevation. While the term *line* is used, for purposes of the CAD model creation, the lines need to be created as polyline objects and coordinates exported as a CSV file.



## Output of Input Data

When the edge lines and other arguments, including desired texture, are passed to the scripts, a 3D model such as the one shown on the right is generated. The model can be automatically textured by selecting corresponding roadway, sidewalk, and roadside texture files. Automatically texturing the model is possible because arguments passed to the script are used to generate the corresponding UV maps.

