

Tutorial 5 - Motion blur with PBRT

Computer Graphics

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Your work on creating an ad for Volkswagen has been impressive and the management want you to continue working for them. As an observant person from the company noticed, your previous videos looked perfectly rendered - but also a bit unrealistic because of the clearly defined shapes and textures. You have been given a task to add motion blur to the videos, and create some sample motion blur photos. Sample code has been provided, which implements the workflow in fig.2 (without the motion blur). Additionally you have also been provided sample file to demonstrate how you can use motion blur in pbrt `killeroo_motionblur.pbrt` and the difference between the two as seen in fig.1.

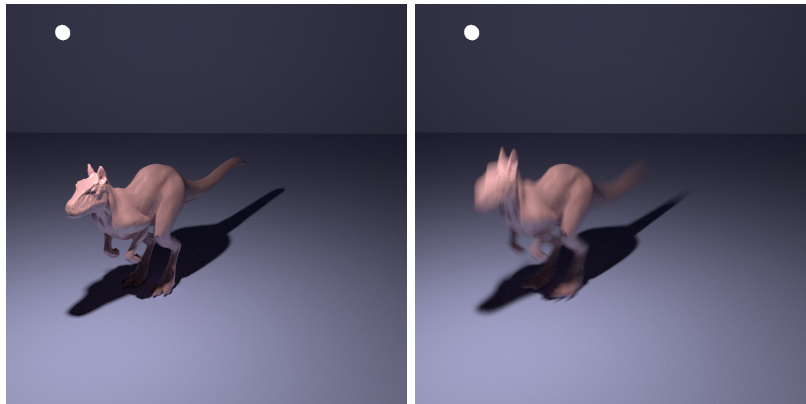


Figure 1: Generating video frames from PBRT template

In generating the videos you can follow the workflow as described in fig.2 - the starting code and the associated model of the bus have been provided.

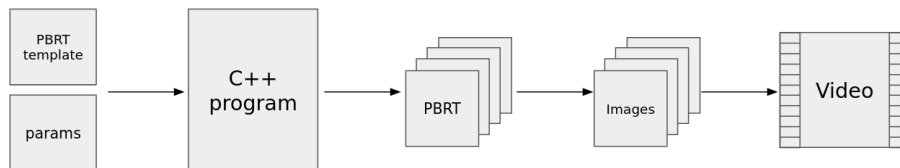


Figure 2: Generating video frames from PBRT template

Part 1: Videos with motion blur

You have been provided `motionblur.cpp` which contains most of the code to get you started. Add the appropriate motion blur in `param.pbrt`. You can compile `motionblur.cpp` on a DICE

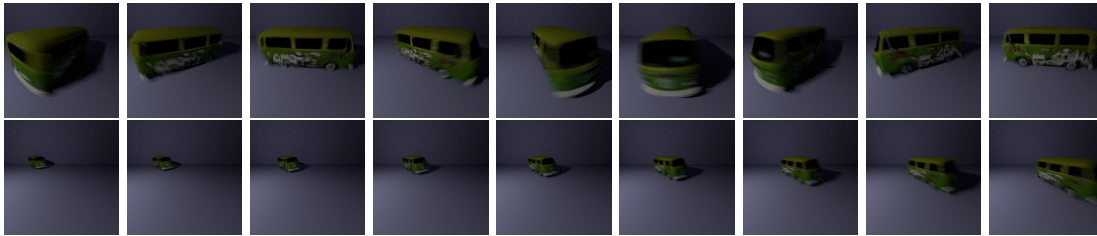


Figure 3: Example video frames with motion blur rendered with PBRT

machine using the command:

```
g++ motionblur.cpp `pkg-config --cflags --libs opencv` -std=c++11 -o motionblur
(note: this is how the quotations should look in the terminal \)
```

When executing the program and you should get a video similar to the one in fig. 3, as in the first row.

Make the necessary changes to implement the video in fig.3, row 2. For that you need to change the bus to change its position (translate) and appropriate motion blur.

Part 2: *Motion blur image*

Many real advertisement of cars in fact use motion blur to create attractive posters (search online for 'motion blur car images'). What additional changes you can implement in order to make a more appealing advertisement?

1. Attractive motion blur and car position - experiment with different motion blur options based on translation and rotation of the car
2. Motion blur in the background - many of the advertisement you will find feature a motion blur in the background of the car, with a still image of the actual car. Can you implement that?