HW3 Extra credit - Leandro Maglianella 1792507

I tried to implement **Adaptive rendering** (4 points) and **Hair Shading** (8 points), but unfortunately I couldn't complete either of them.

Although I was not able to obtain results, I worked on these features with commitment and for a long time therefore it seems correct to me to report here at least how I proceeded.

- Adaptive rendering: I studied the paper (https://jo.dreggn.org/home/2009_stopping.pdf) and its possible implementation (https://github.com/mkanada/yocto-gl). From the main (contained in yscenetrace_adp.cpp) I saw that the rendering was done by the trace_image() function in yocto_trace_adp.cpp, so I took this function and tried to add and adapt it in our render_samples(). At the same time I created a new executable from the folder apps by joining yscenetrace_adp.cpp and our ypathtrace.cpp and editing the CMakeLists. Working on trace_image I noticed that it used data structures (i.e. pixels), attributes (for instance in the struct of pathtrace_state) and many functions not present in our version of yocto, so I tried to add all these missing parts (always taking them from the previous repository) and to debug it all, without success.

- Hair Shading: as before, I studied the paper (https://www.pbrt.org/hair.pdf). Then, looking online to understand how to use .pbrt files and how to create the shader, I came across one of its implementation (https://github.com/dsforza96/yocto-hair) and, as for adaptive rendering, I tried to clone its features and adapt them to our version of yocto, again without success.

Not having been successful, I deleted (or commented out) most of the changes made to the code so that at least the basic functionality of the 26 points compiled.

Running the two repositories directly (without adapting them to our yocto), I produced the images in out/extracredit/.

In extracredit/hair/ there are three correct images and three images created by applying only volpath directly to the scene.

In extracredit/adaptive/ there are seven images of different quality obtained using the -q option. I have placed them here to compare them and be able to appreciate their quality gradually increasing as the parameter q increases.