Subject: Geom cleanup - what do you use?
Posted by mirek on Wed, 25 Oct 2023 10:50:49 GMT
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Geom package is one of last instances of "old code that needs cleaning / moving to upphub".

There is some very useful code in there, some code that needs polishing and some code that is perhaps too specialised and/or obsolete.

So I have an intention to split Geom, move part to Core (3D geometry stuff mostly, also some geomtric algos like line distance), rest to UppHub.

Before I do, I wanted to ask general community: Which part of Geom do you use?

Mirek

Subject: Re: Geom cleanup - what do you use?
Posted by koldo on Wed, 25 Oct 2023 11:57:19 GMT
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Hi Mirek

In my case I use geometry.h (to see if a point is inside a polygon) and delaunay.h (to get a triangular mesh from a set of points).

Subject: Re: Geom cleanup - what do you use?
Posted by deep on Sat, 28 Oct 2023 04:56:39 GMT
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Hi Mirek,

I am using it for various line-line line-arc intersection point calculations.

use geometry.h

Subject: Re: Geom cleanup - what do you use?
Posted by Tom1 on Mon, 30 Oct 2023 06:59:16 GMT
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Hi Mirek,

I'm using Matrixf and functions related to that.

Best regards,

Tom

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Subject: Re: Geom cleanup - what do you use?
Posted by Oblivion on Mon, 30 Oct 2023 12:31:51 GMT
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Hi Mirek,

Quote:So I have an intention to split Geom, move part to Core (3D geometry stuff mostly, also some geomtric algos like line distance), rest to UppHub.

Incidentally, I had already moved and refactored/cleaned up most of the 3D code of geom package into Point3D, Xform3D (inspired by and similar to the Painter's Xform2D) structures and to their related functions (as part of a very lightweight software-based 3D renderer called Sculptor package, which I needed at the time).

I can send in a pull request next weekend, if you'd like to review. (to speed up)

Best regards,
Oblivion

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Subject: Re: Geom cleanup - what do you use?
Posted by Oblivion on Mon, 17 Jun 2024 08:23:24 GMT
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Hi

As I wrote in my previous message, there is a light-weight XForm3D package I had written some time ago. You can find it attached.

1) It is a single header file.
2) It contains Point3D, Point4D, Matrix3D and Matrix4D classes (API is very similar to XForm2D).
3) These classes are aliases for templates that accept floating point types. So it allows for both single and double precision points (classes are templated)
4) It has an IsEqual() function for fuzzy comparing of matrices.

If you find it useful enough, feel free to review and/or adopt it.

P.s. There is also a simple demo app, rendering the famous 3D teapot model, using Upp::Painter

with this XForm3D. I will also upload that (but first I need to clean-up its code).

Best regards,
Oblivion

## File Attachments
1) Xform3D.h, downloaded 283 times

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Subject: Re: Geom cleanup - what do you use?
Posted by Oblivion on Tue, 18 Jun 2024 08:36:58 GMT
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XForm3D rendering code:

Attached simple example renders the teapot object, using the XForm3D api + Upp:Painter.

Screenshot:

Edit: Fixed layout file path.

Best regards,
Oblivion

## File Attachments
1) XForm3DExample.zip, downloaded 302 times

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Subject: Re: Geom cleanup - what do you use?
Posted by koldo on Tue, 18 Jun 2024 13:58:05 GMT
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Hi Oblivion

Although I think the original post was not devoted to show this code, it is very interesting.

To run it in Windows and CLANG as deployed in U++, I have had to do a couple of changes:

- Set 'struct' instead of 'class' in 'template<typename T> struct Point3_;'
- In 'Perspective', 'Frustum' and 'Ortographic', replace 'near' and 'far' with other names. Maybe they are reserved.

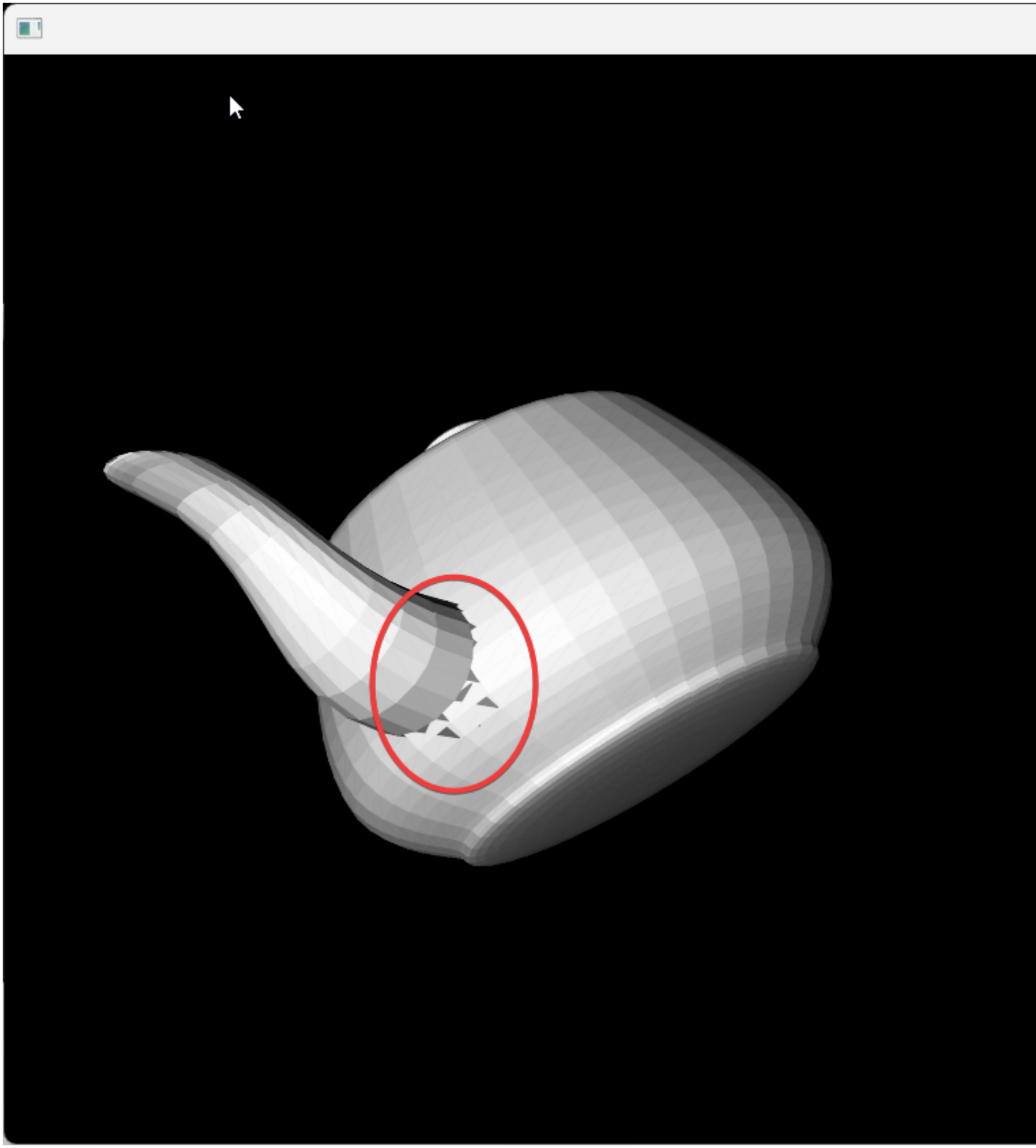
The speed is right, even moving >15000 panels. I have opened the teapot four times, moving it to different positions to avoid overlapping.

There are minor details that can be added, such as the definition of background colour, object colour, location and lighting intensity, but, overall, this demo has the highest interest versus size ratio I've seen in a long time

A question: the broken panels selected in red, are they a defect from the original model, or are a defect in rendering?

## File Attachments

1) image.png, downloaded 848 times

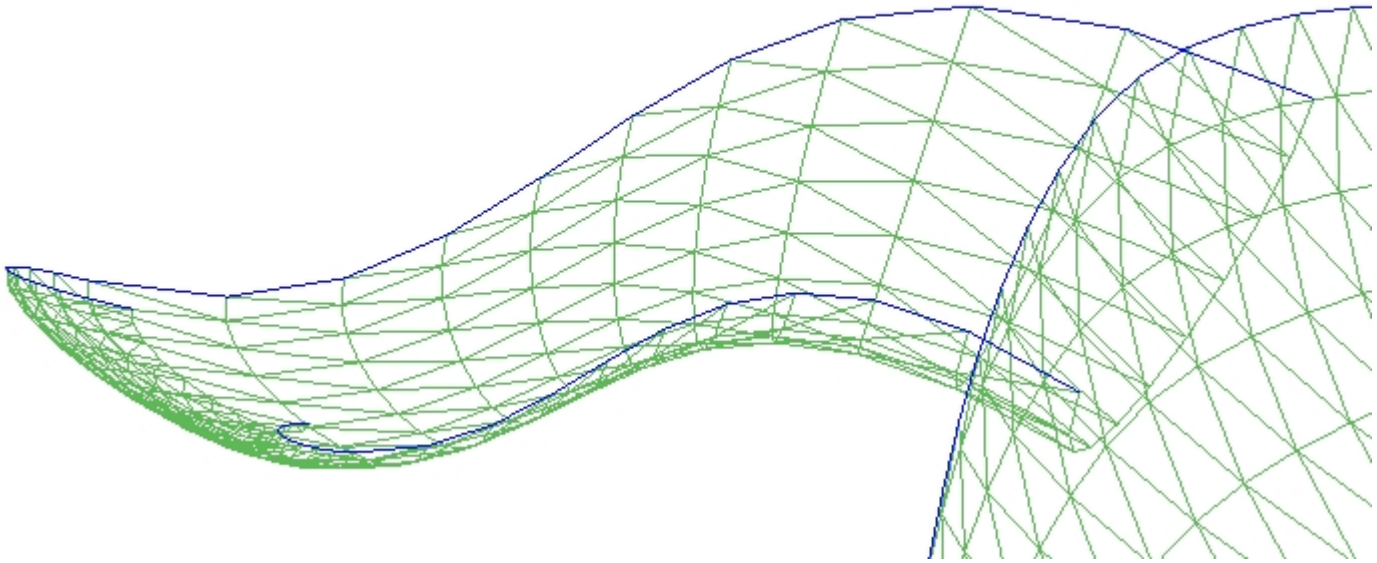


Subject: Re: Geom cleanup - what do you use?
Posted by koldo on Sun, 23 Jun 2024 08:03:18 GMT
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It seems that the original mesh doesn't fit well in that area.

## File Attachments

1) image.jpg, downloaded 1069 times



Subject: Re: Geom cleanup - what do you use?
Posted by Tom1 on Thu, 27 Jun 2024 13:13:54 GMT
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Hi Oblivion,

Very nice, indeed!

Just like Iñaki (Koldo) pointed out, I also had to do the following changes on Windows:
Quote:To run it in Windows and CLANG as deployed in U++, I have had to do a couple of changes:

- Set 'struct' instead of 'class' in 'template<typename T> struct Point3_;'
- In 'Perspective', 'Frustum' and 'Ortographic', replace 'near' and 'far' with other names. Maybe they are reserved.

The same changes are also required on Windows when compiling with MSBT.

Thanks and best regards,

Tom

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Subject: Re: Geom cleanup - what do you use?
Posted by Oblivion on Sun, 20 Apr 2025 11:09:05 GMT
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Hi,

I have uploaded Xform3D as a standalone UppHub package, with example, improvements, autotests and API doc.

Best regards,
Oblivion

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