Re: Projecting the points into the image pixels

Alon Zvirin <alonzvirin@gmail.com>

Sun 9/5/2021 12:40 PM

To: Maayan Agmon <agmon.mn@gmail.com>
Cc: Lotem Nadir <lotemn@campus.technion.ac.il>; ron <ron@cs.technion.ac.il>; Omer Dilian <dilian.omer@gmail.com>

Hi Lotem and all,

There are few issues:

1. A fixed calibration between the Vicon and realsense.
As far as I know, this was not done yet.
2. Projecting the Vicon points to the realsense images:
If the points are seen (in the camera's field of view), they should be projected into the camera's image (not outside).
but not directly by applying the realsense camera matrix, since the Vicon points are in a different coordinate system.
If you have an ordered set of points in both coordinate systems (and I think you do or can easily list them),
there is a closed solution (Kabch's formula) for transformation between two coordinate systems;
Otherwise you need some "heavier" algo such as ICP (Iterative closest point).

I don't think you should "let the network learn the transformation", this is not the proper way to do it,
especially when you can estimate this transformation.
You can later try to let a network (or other method) improve an initial calibration estimation if needed.

Feel free to contact me 052-42515256. I'm in room 443 .

Alon

On Sun, Sep 5, 2021 at 8:26 AM Maayan Agmon <agmon.mn@gmail.com> wrote:

> I think that Omer can answer this question.
>
> On Sun, Sep 5, 2021 at 7:26 AM Lotem Nadir <lotemn@campus.technion.ac.il> wrote:
>
> > Thanks, Maaayan
> >
> > Omer - If i remember correctly we have disscused the calibration problem briefly before, but i thought then that it won't be a major problem since a network might learn this transformation.
> > Were the realsense cameras callibrated at any of the sessions? I'm wondering what do the callibration values i'm reading from the bag files represent...
> >
> > ---
> >
> > **From:** Maayan Agmon <agmon.mn@gmail.com>
> > **Sent:** Sunday, September 5, 2021 6:52:11 AM
> > **To:** ron <ron@cs.technion.ac.il>; Omer Dilian <dilian.omer@gmail.com>
> > **Cc:** Lotem Nadir <lotemn@campus.technion.ac.il>; Alon Zvirin <alonzvirin@gmail.com>
> > **Subject:** Re: Projecting the points into the image pixels

Thanks, Ron and Lotem. I have added Omer to the discussion since I know that he calibrated the systems at least practically and he can give more details if needed.
Shana Tova,
Maayan

On Sat, Sep 4, 2021 at 5:19 PM ron <ron@cs.technion.ac.il> wrote:

> Hi Lotem,
>
> There is a way to correct something if you know the location of the points (or some of them) in the image... Talk to Alon for a fix. But I assumed the protocol was to calibrate both systems so that they are aligned... This is how it should have been done to begin with.
>
> Shana Tova!
> Ron
>
> _____
> Ron Kimmel Professor
> Montreal Chair in Sciences
> Computer Science Department
> Technion-Israel Institute of Technology
> Haifa 32000, Israel
> www.cs.technion.ac.il/~ron
>
> > On Sep 4, 2021, at 4:09 PM, Lotem Nadir <lotemn@campus.technion.ac.il> wrote:
> >
> > Hi Ron,
> >
> > How are you?
> > Regarding our conversation on Thursday (Maayan: we have decided to train the OpenPose net "as is" on our data for sanity check. This requires us to project the vicon 3d points into the image 2d pixels), I think that the RealSense cameras were not calibrated. I'm projecting the points on the image using the calibration parameters written in the realsense bag files, but the pixels i'm getting are out of the image boundaries. I have to shift all the points along the different axes before projecting them in order to see the object in the image frame. Even after doing that, the results are not accurate enough, for example:
> > <projection.png>
> >
> > Is there a way to recover the calibration parameters from the images?
> >
> > Thanks,
> > Lotem

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