Astrometry paper:

<https://arxiv.org/pdf/0910.2233v1.pdf>

Here is a possible dataset:

<http://www.astronexus.com/hyg>

I think "hello world" might be the task of understanding:

how this database is organized:

what data is in it,

how to sort for very bright stars, and then

how to make a pictures of the sky that we might a little bit recognize.

I think the key parts of this would be the x,y,z columns, normalized to be a unit vector, then drawn somehow, but I'm not sure about that and I'm hoping that you can figure it out.

interactive training of object detectors:

<http://www.cse.wustl.edu/~pless/papers/romanPlessISVC.pdf>

<http://research.engineering.wustl.edu/~pless/papers/AIPR_democratizingFinal.pdf>

<http://research.engineering.wustl.edu/~pless/papers/fspca.pdf>