

Supplementary Materials for
**LENS: Localization enhanced by NeRF
synthesis**

This document presents additional visualizations of our method LENS. We also invite readers to view the supplementary video where view synthesis and localization results are shown.

1 Appearances interpolation

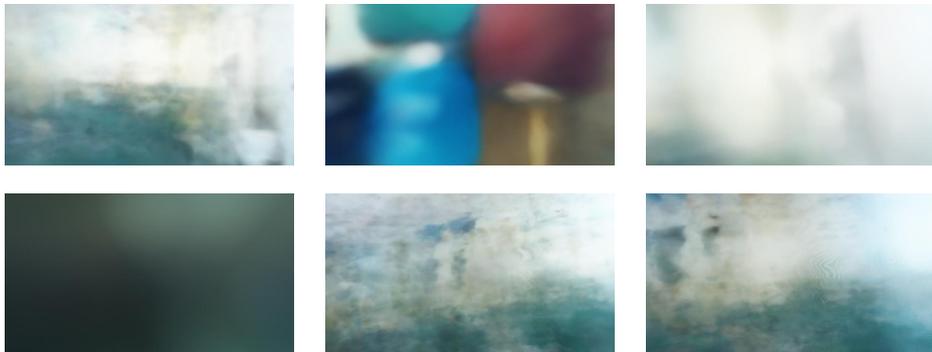
Nerf-W proposes control on appearance of rendered images during the novel view synthesis process. Some examples are shown below on StMarysChurch scene, and more are available in the supplementary video.



Figure 1: Examples of images rendered from the same views with appearances sampled by random interpolation of appearance embeddings.

2 Novel view synthesis from occluded viewpoints

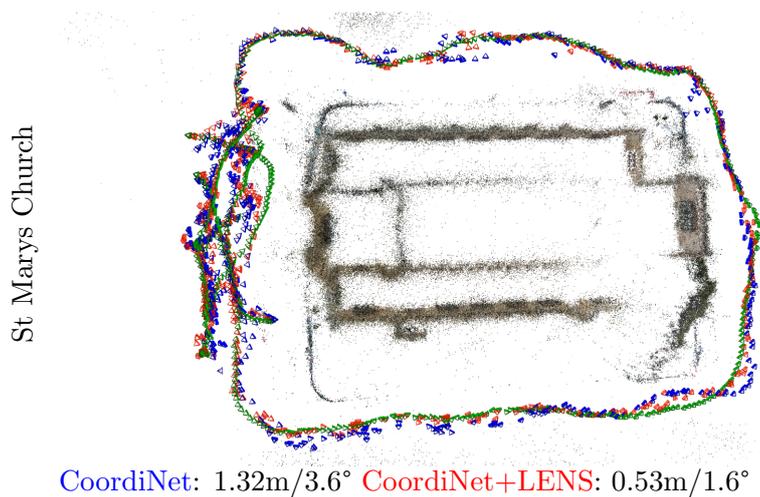
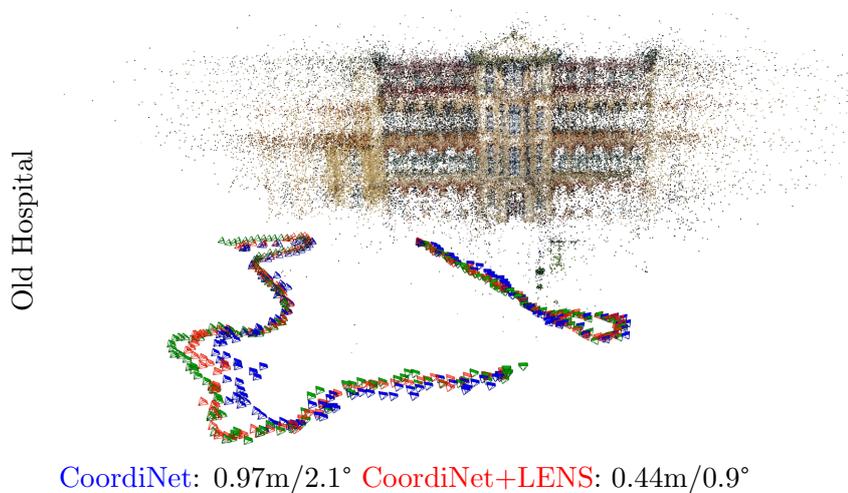
Our method LENS enable to avoid virtual camera locations where the view is occluded by the scene environment. We show here some of these viewpoints rendered during the ablation, and that have been observed to be counter productive for localization accuracy.



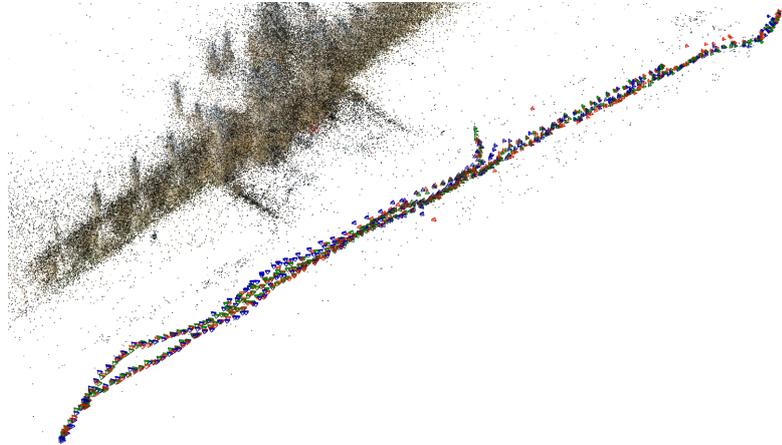
3 Localization trajectories

We show below the results of our method on Cambridge Landmarks and 7scenes datasets. Predicted poses from our method **CoordiNet+LENS** (**red cameras**) are compared to groundtruth (**green cameras**) and to CoordiNet trained without synthetic data (**blue cameras**).

We can observe the improvement brought by synthetic data: resulting trajectories are more accurate and exhibit a better time consistency than the same camera pose regressor trained only with real data.

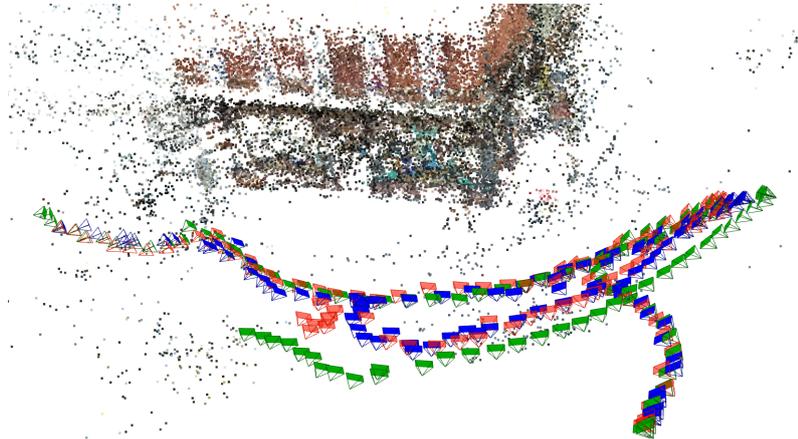


Kings College



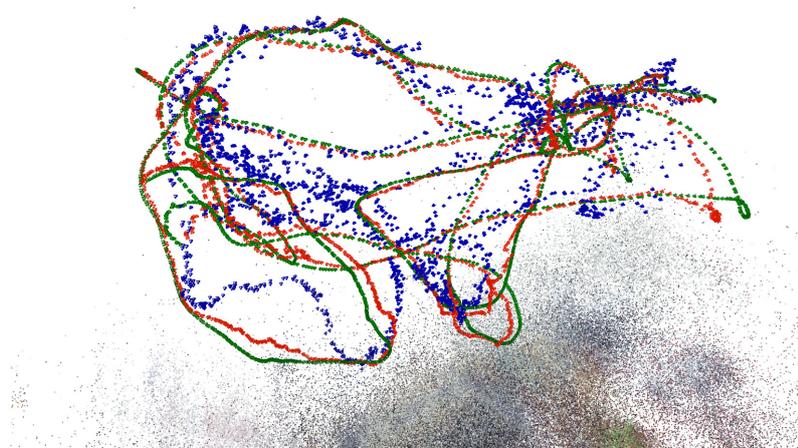
CoordiNet: 0.70m/0.9° CoordiNet+LENS: 0.33m/0.5°

Shop Facade



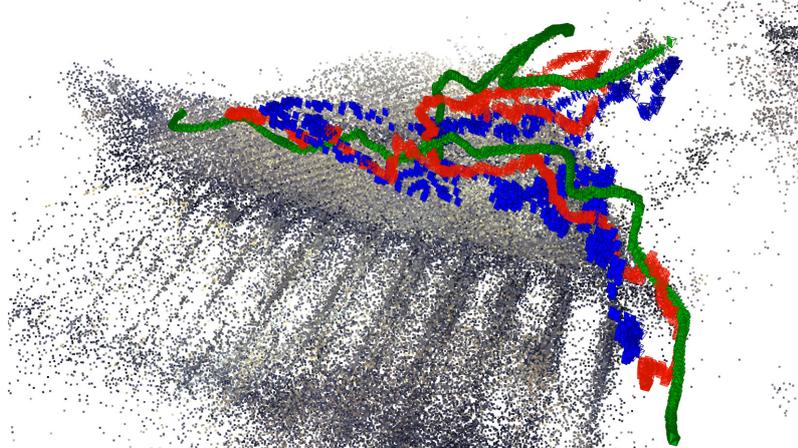
CoordiNet: 0.55m/3.5° CoordiNet+LENS: 0.53m/1.6°

Chess



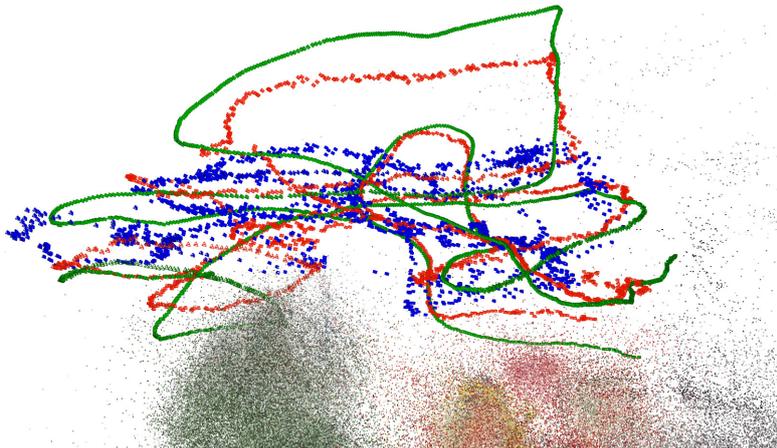
CoordiNet: 14cm/6.7° CoordiNet+LENS: 3cm/1.3°

Stairs



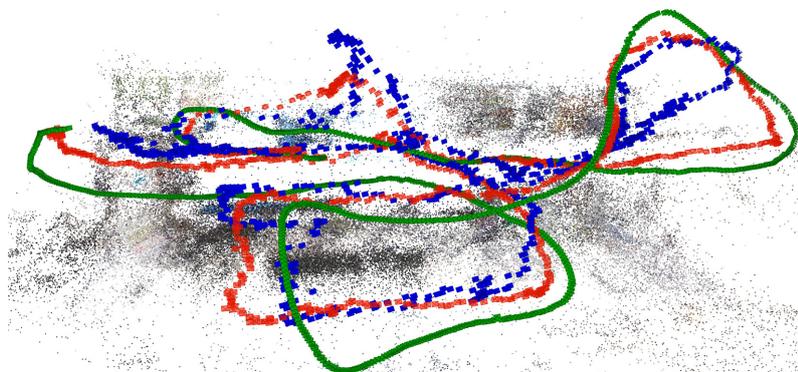
CoordiNet: 28cm/12.9° CoordiNet+LENS: 14cm/3.6°

Fire



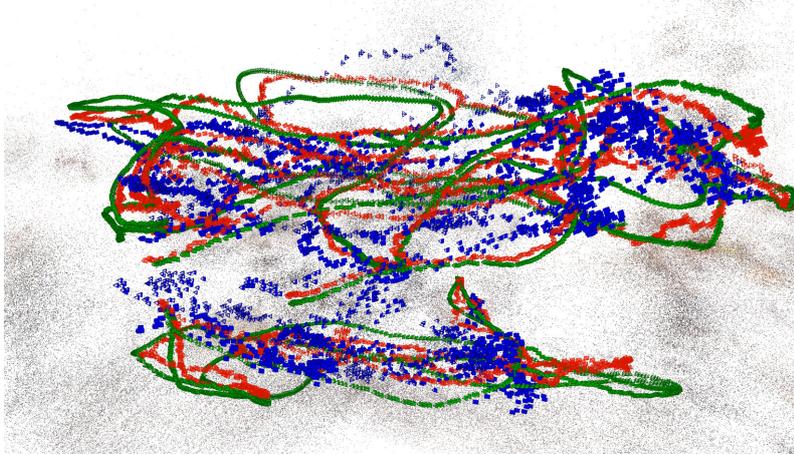
CoordiNet: 27cm/11.6° CoordiNet+LENS: 10cm/3.7°

Heads



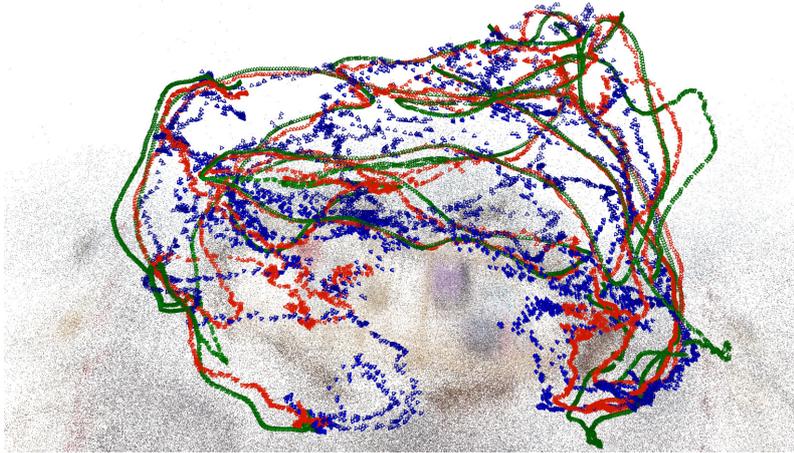
CoordiNet: 13cm/13.6° CoordiNet+LENS: 7cm/5.8°

Office



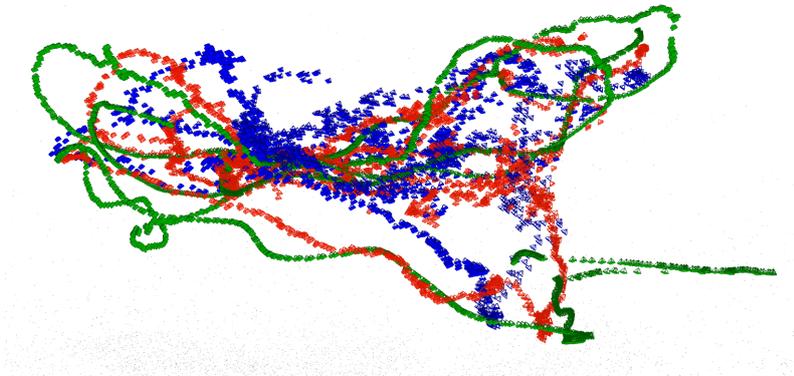
CoordiNet: 21cm/8.6° CoordiNet+LENS: 7cm/1.9°

Red Kitchen



CoordiNet: 26cm/7.5° CoordiNet+LENS: 9cm/2.2°

Pumpkin



CoordiNet: 25cm/7.2° CoordiNet+LENS: 8cm/2.2°