A. Processing auxiliary dataset

In the experiment section of the main paper, we briefly described how to process the auxiliary dataset $D_A$ to train the prior. Specifically, we generated a set of both plausible and implausible poses and calculated the corresponding distance values from the pose manifold $	ilde{D} = \{(\theta_i, d_i)\}_{i=1}^M$.

For poses derived from the auxiliary dataset, we label them as plausible poses and assign a distance value of $d = 0$. To generate an implausible pose $\theta_{nm}$, we first randomly sample a pose $\theta_m \sim D_A$ and convert the sampled pose to polar coordinates,

$\begin{align*}
u_1 &= \arccos(\theta_1^m) \\
u_2 &= \arcsin(\theta_2^m).
\end{align*}$

Next, we sample noise from the Von-Mises distribution,

$n_1, n_2 \sim f(n|\mu, \kappa)$ where $f(n|\mu, \kappa) = \frac{\exp(\kappa \cos(n - \mu))}{2\pi I_0(\kappa)}$,

and add it to the coordinates to obtain the new pose $\theta_{nm}$,

$\begin{align*}
\theta_1^{nm} &= \cos(u_1 + n_1) \\
\theta_2^{nm} &= \sin(u_2 + n_2).
\end{align*}$

In our experiments we set $\mu = 0$ and sample $\kappa$ randomly from the set $\{2, 4, 8\}$.

We employ the nearest neighbor strategy described in [1] to assign a distance value to each synthetically generated pose. To accomplish this, we first use FAISS [2] and L2 distances to approximate the $k'$ nearest neighbors of the pose from the set of clean poses. From these neighbors, we identify the exact $k$ nearest ones. In our approach, we set $k' = 500$ and $k = 5$. Finally, we determine the ground truth distance by calculating the average of the $k$ smallest distances.

B. Qualitative results

We present additional visual results on the SURREAL $\rightarrow$ BRIAR scenario in Figure A-1. Although our approach does not use any source data for adaptation, it is able to match the predictions produced by UDAPE [3], which uses source data.

References


Figure A-1. **Qualitative results on SURREAL $\rightarrow$ BRIAR.** We demonstrate sample results on the BRIAR dataset at all ranges. For each range, we display three images: the leftmost shows the *Source only* prediction, the middle one shows the *UDAPE* [3] prediction, and the rightmost shows the prediction made by our framework.