

Research Focus: By using IDT modality, recover better 3D RI using a deep learning framework.

Methodology:

- Traditional IDT and uses only the intensity image obtained with different light directions to reconstruct the RI.
- A former work by Prof. Yi Xue introduced BRIEF to combine fluorescence imaging with IDT, exciting a fluorescent point to light up the upper samples, and used FISTA to compute gradient and do backward updates.
- NeRF's MLP layers were adopted to compute a 1 channel output as input for RI, a rendering process of multislice model was used to process the RI into intensity image, then loss was computed and trained.

Performance: Can now reconstruct intensity on simulated data, need improvement on RI.

{% include figure.html path="assets/img/RI_model.jpg" title="example image" class="img-fluid rounded z-depth-1" %}

It's the overall model of this work.