



どんな研究？

We are participating in AMED to realize early diagnosis of diseases and ultra-precise examinations, and are working on the advancement of photo-acoustic imaging for non-invasive, non-destructive, real-time 3D visualization of the inside of living bodies and objects. In this research, we proposed a computer vision technique for obtaining clear images in order to understand capillary vessel conditions closely related to diseases.

何がわかる？

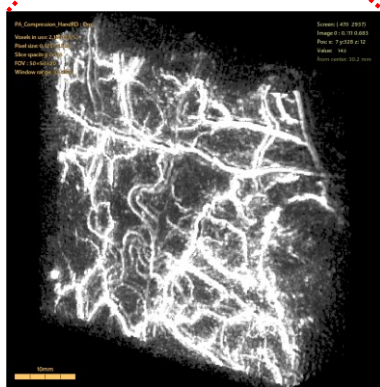
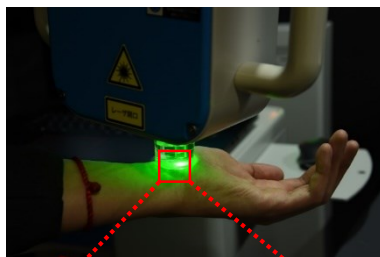
- Explored the reliability variance in PA data.
- Proposed a restoration framework.
- Reconstruct high quality PA for further application.

研究内容

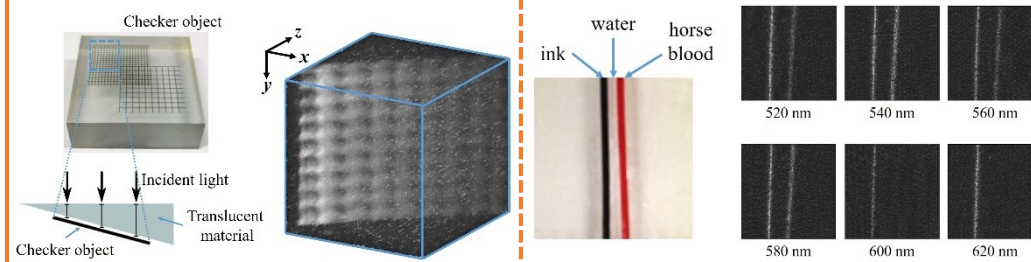
PA scanning
time-consuming
complex noise



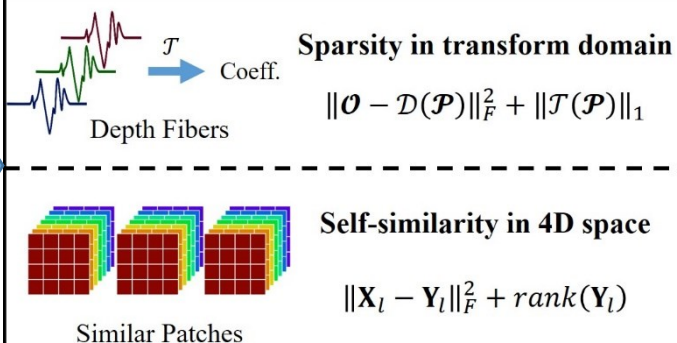
Org data
degradation
low-quality
difficult to diagnosis



Reliability analysis spatial model, spectral model



Observation: $\mathcal{O} = \mathcal{D}(\mathcal{P}) + \mathcal{N}$



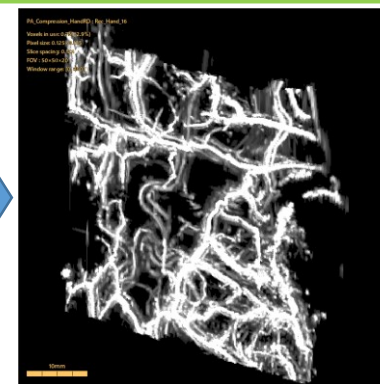
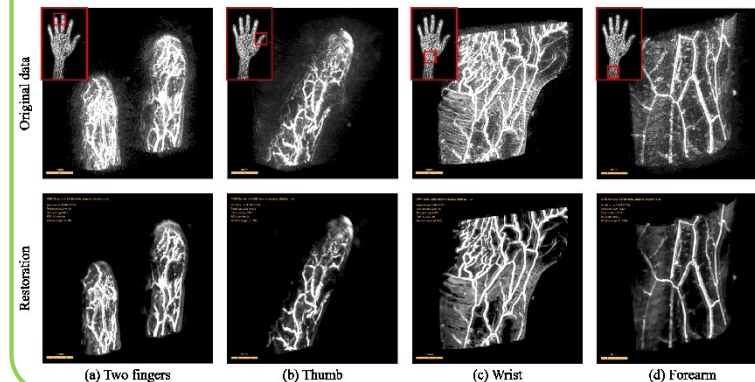
Restoration

correlation in 4D space
data constraints
regularization

Algorithm

ADMM
SVD

Other visualization



Rec result

clean, noise-free
high-quality
easy for diagnosis

Further medical
check