# PNI: INDUSTRIAL ANOMALY DETECTION USING POSITION AND NEIGHBORHOOD INFORMATION

# VS

# AE-FLOW: AOTOENCODERS WITH NORMALIZING FLOWS FOR MEDICAL IMAGES ANOMALY DETECTION

Jaehyeok Bae[1,2], Jae-Han Lee[1], Seyun Kim[1]
wogur110@snu.ac.kr, {jaehan.lee, seyun.kim}@gausslabs.ai

Presenters: Yuki[4] & Yu[4]

Yuzhong Zhao[3], Qiaoqiao Ding[3], Xiaoqun Zhang[3]
zhaoyuzhong, dingqiaoqiao, xqzhang}@sjtu.edu.cn

## Why?

- Anomaly Detection relies on pretrained models due to lack of anomalous samples
- Existing methods ignore position and neighborhood information in normal feature distribution

- AEs have limited capabilities in modelling high-dimensional data distribution
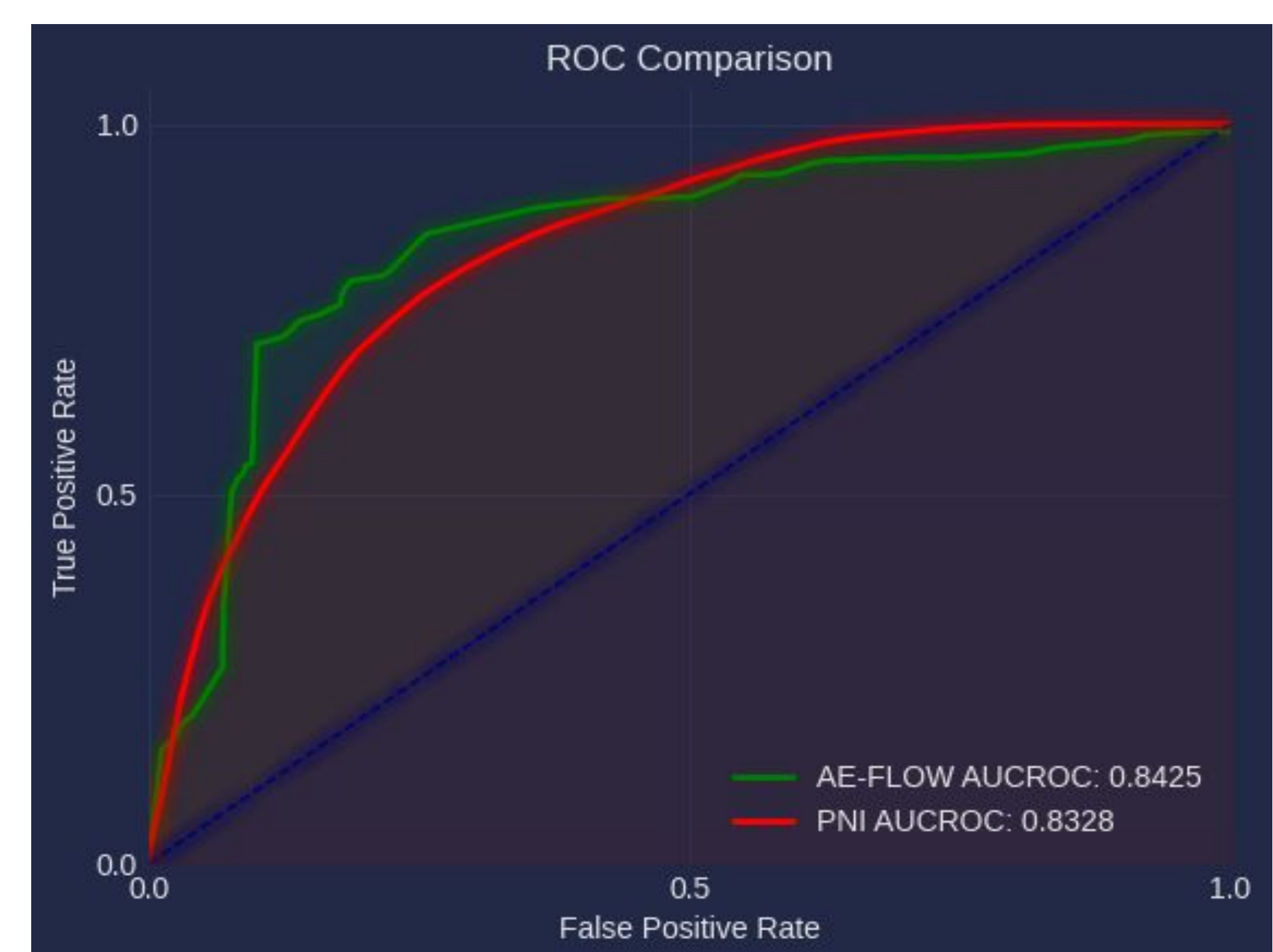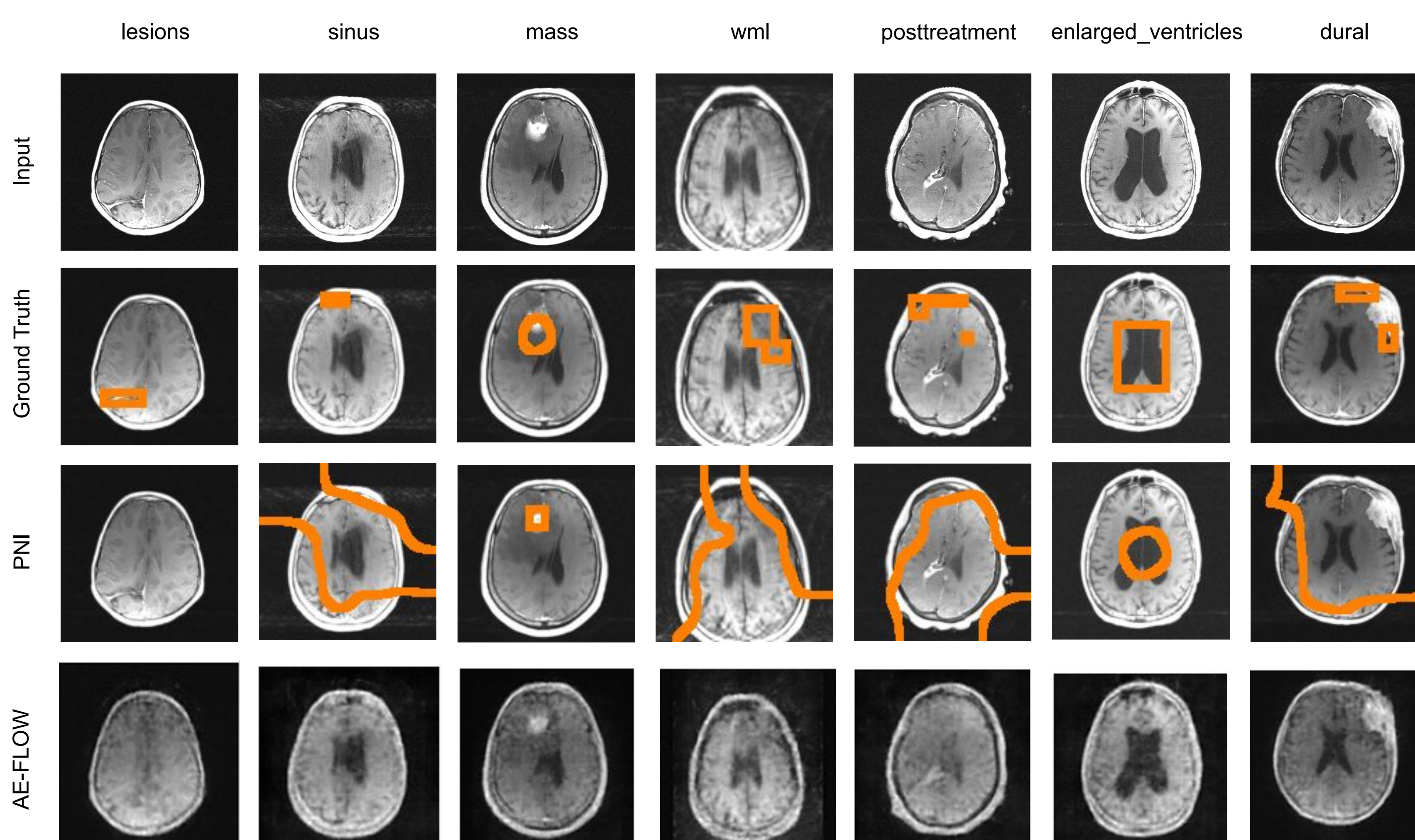- Erroneous reconstructions such as blurry image
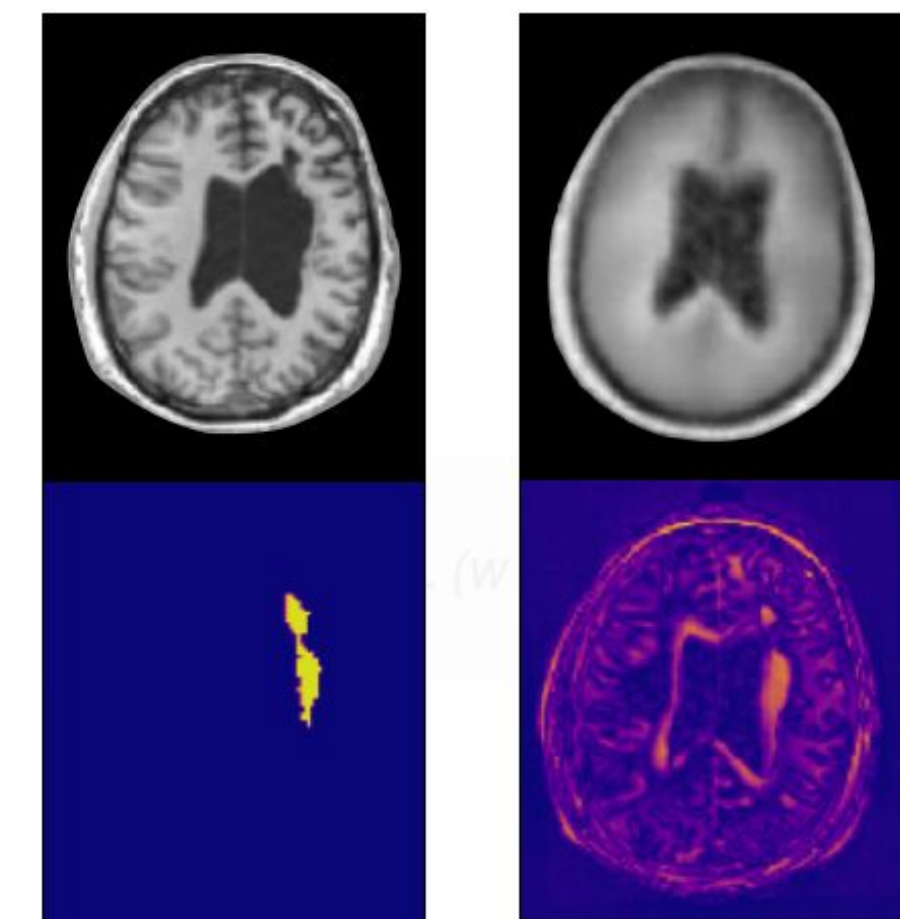


## How?
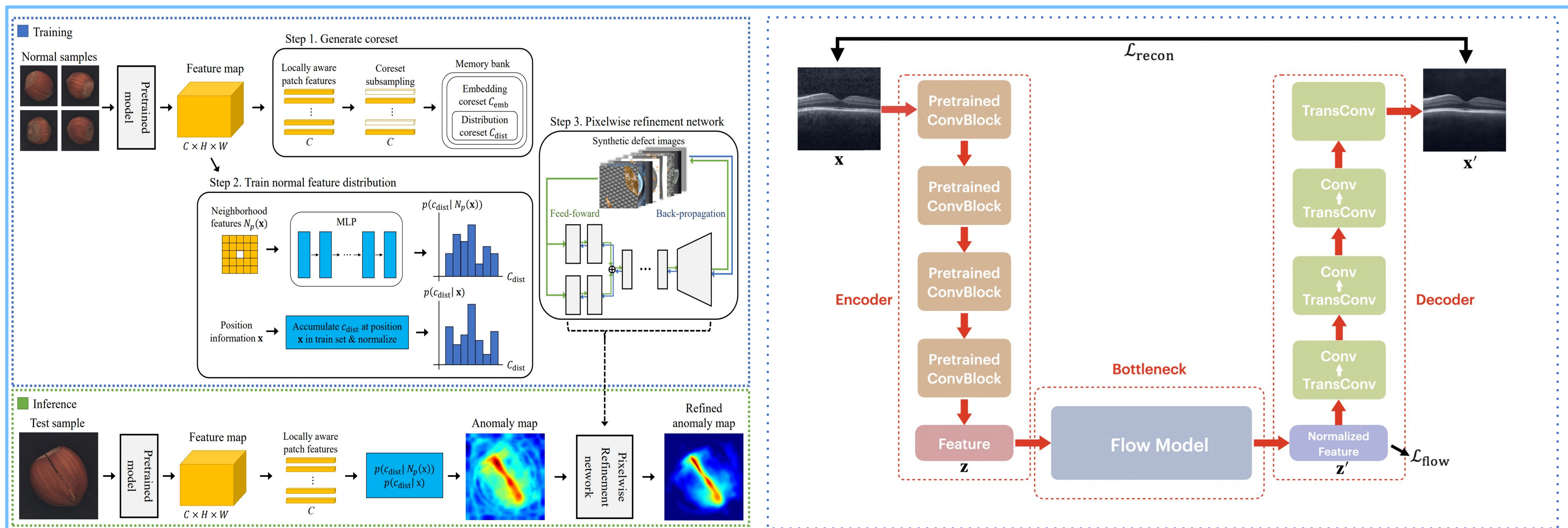


- Use the pretrained model as feature extracters
- Add MLP to train neighborhood fearures
- Implement refinement network to refine anomaly map

- Just insert a flow model!
- Keep structural information with CNN encoder
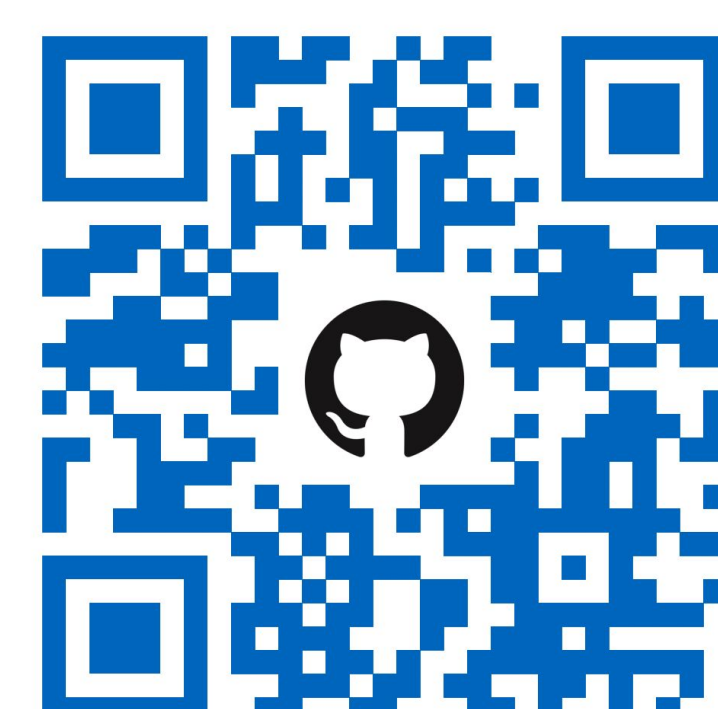- 8 flow steps in flow model

## Results





- These values are good according to the AUROC mertic, but its usefulness is low when we look at the anomaly map.

## Code



PNI



AE-FLOW

1 Gauss Labs Inc.
2 Seoul National University
3 School of Mathematical Sciences, MOE-LSC and Institute of Natural Sciences, Shanghai Jiao Tong University
4 Technical University Munich.  TUM School of Computation, Information and Technology

Contact ✉
yuki.tashiro@tum.de
realyu.wang@tum.de