




Initial Project Proposal

- Paper: *SimMIM: A Simple Framework for Masked Image Modeling* 
 - Accepted to CVPR 2022. Authored by Microsoft. GitHub 
- Description: A simplified framework for masked image modeling.
 - **Masked image modeling:** Predicting masked out regions of an image.
 - Prior frameworks for MIM required complex designs.
 - SimMIM yields competitive/SOTA benchmarks while being simpler.
- New dataset: CheXpert 
 - 224,316 chest radiographs of 65,240 patients.
 - 14 observations per image, each positive, negative, or uncertain.
- Core technical challenge:
 - *SimMIM*, as with prior MIM frameworks, is trained on ImageNet-1K.
 - However, radiographs are significantly less diverse than ImageNet images.
 - Furthermore, in radiographs, features of a positive observation may be strongly localized in specific image regions, but labels are ignored in pre-training.
 - So, the model may primarily learn global anatomical structure rather than pathology-relevant representations.
 - Therefore, the core challenge is determining whether SimMIM can perform self-supervised representation learning of radiographs that can be efficiently fine-tuned to classify clinical observations.