

Research Plan



Brief Introduction

Expected Term	Winter 2024
Research Topic	Expand More Models for Frequency Regularization and Deploy on Android Devices
Why Significant	Creative and popular topic Proof of FR's universal applicability The first Android product
What We Plan to Do	Clean the existing codes and increase their maintainability Expand more neural network models (ResU-Net, SegNet, X-Net) Test expanded models with Frequency Regularization on laptop Test on Android Devices Decrease the usage of RAM (our current idea is to separate the original image and to implement different compression algorithms based on different situations) Clean codes and prepare the documentations Develop an advanced Android App including all the popular models, which means user can choose the models they want Collect all the data and release an advanced patent/conference paper
Existing Github Link	https://github.com/btxcy/NeuralOnMobile
Contact Email	wyou1@ualberta.ca;chewei@ualberta.ca

1.0 Why Significant?

Currently, people can not live without mobile devices. Meanwhile, Convolutional neural networks play an important role in computer vision applications. However, these neural networks are usually implemented on high-specification hardware. Our research topic plays an pioneer of this area.

Furthermore, to expand more neural networks except U-Net can prove how useful the Frequency Regularization. Our research would probably be the first Android Application to realize high-efficient image segmentation with Frequency Regularization.

1.1 Expected Timeline

- 2023/01/20 • Clean all the existing codes and increase their maintainability
- 2023/01/25 • Remove U-Net and add ResU-Net, SegNet, and X-Net to adjust
- 2023/02/10 • Test these expanded models with Frequency Regularization on laptop
- 2023/02/15 • Test these expanded models with Frequency Regularization on Android
- 2023/02/20 • Collect and analyze the data
- 2023/02/25 • Clean codes and Github Repository (e.g. documentations)
- 2023/03/01 • Develop an advanced App with fantastic User Interfaces
- 2023/03/20 • Create an advanced patent/conference paper
- 2023/04/01 • Improve patent by peer review