Task Arithmetic in the Tangent Space: Improved Editing of Pre-Trained Models

Author Response

1. Task Arithmetic with a Convolutional Architecture

Table R.1: **Task addition of 8 tasks with CNN.** We use the same setup as for the experiments in the main text substituting the ViT models with a CLIP ConvNeXt pre-trained on LAION-400M.

Method		ConvNeXt	
		Abs. ($\uparrow$)	Norm. ($\uparrow$)
Pre-trained	$f(\,\cdot\,;\boldsymbol{\theta}_0)$	57.5	–
Non-lin. FT	$f(\,\cdot\,;\boldsymbol{\theta}_0+\boldsymbol{\tau})$	79.1	83.6
Linear. FT	$f_{\text{lin}}(\,\cdot\,;\boldsymbol{\theta}_0+\boldsymbol{\tau}_{\text{lin}})$	**81.1**	**85.7**

2. Weight Disentanglement in Other Architectures and Modalities

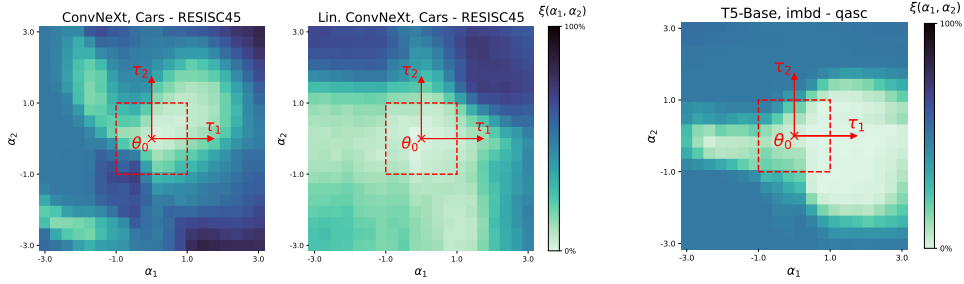

Figure R.1: **Visualization of weight disentanglement.** The heatmap shows the disentanglement error $\xi(\alpha_1,\alpha_2)$ of a non-linearly and linearly fine-tuned ConvNeXt on a pair of vision tasks (**two left panels**) and a T5-Base model fine-tuned on a pair of NLP tasks (**right panel**).
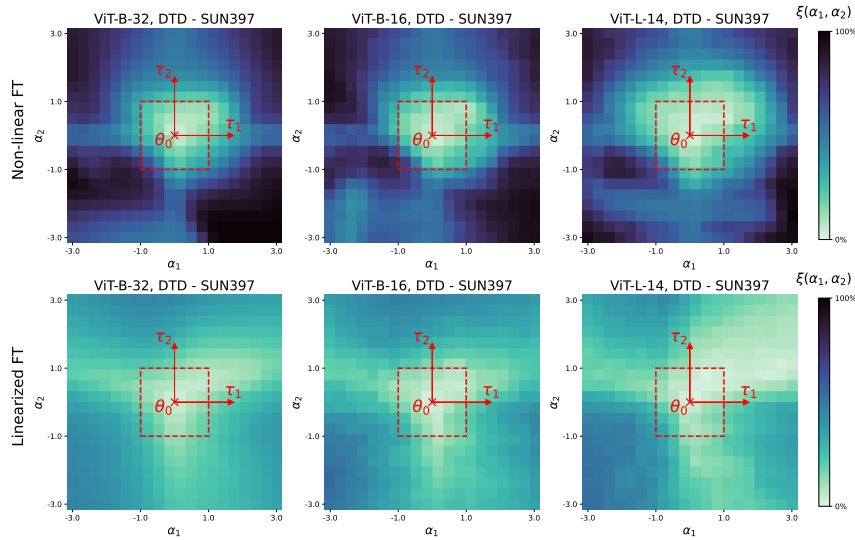
3. Weight Disentanglement and Model Scale

Figure R.2: **Visualization of weight disentanglement.** The heatmaps show the disentanglement error $\xi(\alpha_1,\alpha_2)$ of non-linear CLIP ViT models of different sizes and their linearization.