

# Is Normalization Indispensable for Multi-domain Federated Learning?

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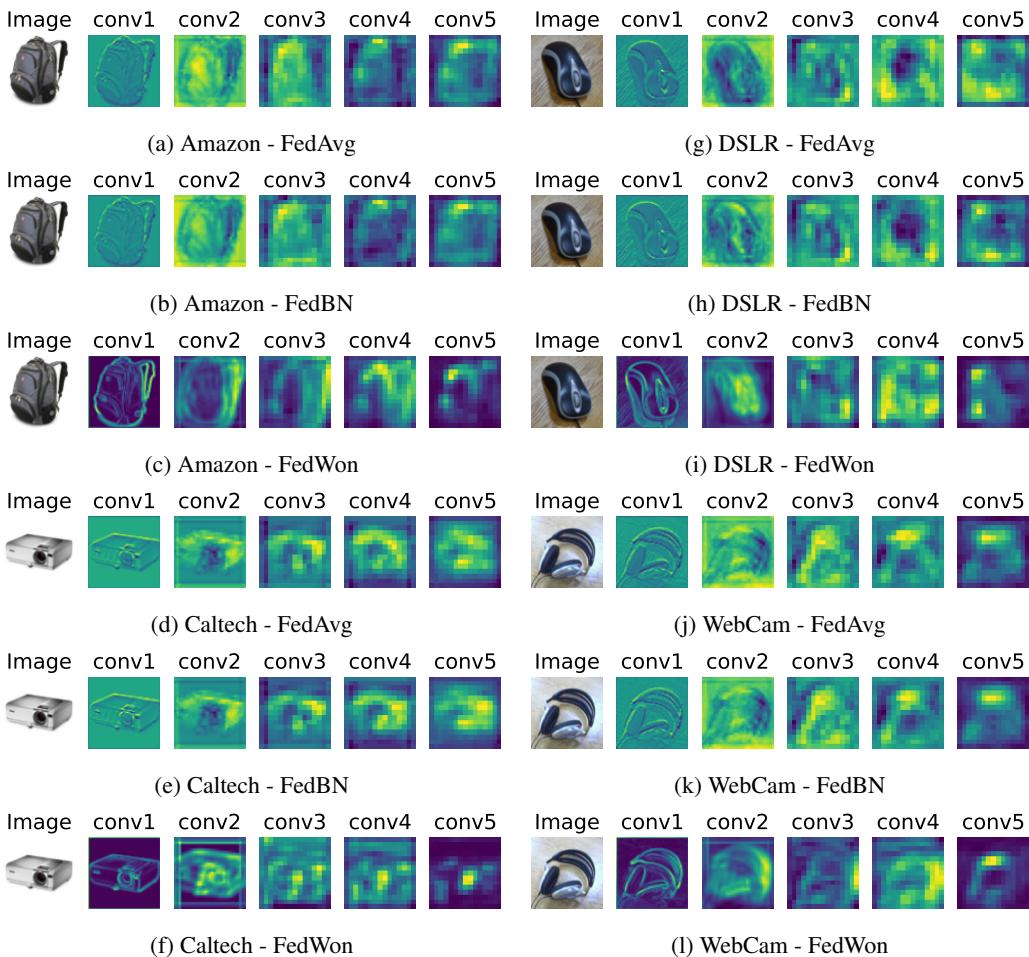


Figure 1: Visualization of feature maps of FedAvg, FedBN, and our proposed FedWon on the Office-Caltech-10 dataset, which contain four domains: Amazon, Caltech, DSLR, and WebCam.

Figure 1 presents the visualization of feature maps obtained through three methods: FedAvg, FedBN, and our newly proposed FedWon. These feature maps are the output of each convolution layer in AlexNet on Office-Caltech-10 dataset, which encompasses data from four distinct domains, namely Amazon, Caltech, DSLR, and WebCam. FedWon methodology exhibit significantly enhanced activations on object representations compared to those produced by the FedAvg and FedBN.