

This code is to reproduce the results in the submission, “Center Transfer for Supervised Domain Adaptation”, to *Applied Intelligence*.

Requirements

- Python 3
- PyTorch
- Keras (source code of CCSA (reproduce) approach is based on Keras framework)

Dataset Preparation

- Office31
- Office-Caltech-10
- Digit Transfer first experiment (i.e., MNIST, USPS, SVHN, and MNIST-M)
- Digit Transfer second experiment (i.e., MNIST-USPS splits)
- Sensitivity analysis (i.e., MNIST-USPS splits)
- Feature visualization (i.e., MNIST-USPS splits)

Office31, MNIST, USPS, and SVHN are automatically downloaded by “ipynb” files. [Office-Caltech-10](#), [MNIST-M](#), and [MNIST-USPS splits](#) are required to be manually downloaded.

Running the code

We recommend running the code on [Colab](#), an online platform provided by Google. Alternatively, the code can also be run locally using [Jupyter Notebook](#). Each “ipynb” can be executed independently in two steps:

- 1) Open the “ipynb” file you feel interest in using [Colab](#) or [Jupyter Notebook](#).
- 2) Follow the detailed instruction displayed within “ipynb”.

Reference list below is to help match experiments in the manuscript and their corresponding “ipynb” files.

- Office31 experiment
 - Proposed CTL
Code\Office31\CTL.ipynb
 - Baselines
Models 1, 2, and 3:
Code\Office31\Baselines\Model123.ipynb
UCTL:
Code\Office31\Baselines\UCTL.ipynb

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- Office-Caltech-10
 - Proposed CTL
Code\Office-Caltech-10\CTL.ipynb
 - Other SOTAs
CCSA:
Code\Office-Caltech-10\Other SOTAs\CCSA.ipynb
d-SNE:
Code\Office-Caltech-10\Other SOTAs\d_SNE.ipynb

DAG-LDA:

Code\Office-Caltech-10\Other SOTAs\DAG_LDA.ipynb.

MF:

Code\Office-Caltech-10\Other SOTAs\MF.ipynb

➤ Baselines

Models 1, 2, and 3:

Code\Office-Caltech-10\Baselines\Model123.ipynb

UCTL:

Code\Office-Caltech-10\Baselines\UCTL.ipynb

• Digit Transfer first experiment

➤ Proposed CTL

MNIST→MNIST-M:

Code\Digit transfer\First experiment\MNISTtoMNISTM.ipynb

MNIST↔USPS:

Code\Digit transfer\First experiment\MNIST_USPS.ipynb

MNIST↔SVHN:

Code\Digit transfer\First experiment\MNIST_SVHN.ipynb

➤ Baselines

MNIST→MNIST-M; Models 1, 2, and 3:

Code\Digit transfer\First experiment\Baselines\MNISTtoMNISTM_Model123.ipynb

MNIST→MNIST-M; UCTL:

Code\Digit transfer\First experiment\Baselines\MNISTtoMNISTM_UCTL.ipynb

MNIST↔USPS; Models 1, 2, and 3:

Code\Digit transfer\First experiment\Baselines\MNIST&USPS_Model123.ipynb

MNIST↔USPS; UCTL:

Code\Digit transfer\First experiment\Baselines\MNIST&USPS_UCTL.ipynb

MNIST↔SVHN; Models 1, 2, and 3:

Code\Digit transfer\First experiment\Baselines\MNIST&SVHN_Model123.ipynb

MNIST↔SVHN; UCTL:

Code\Digit transfer\First experiment\Baselines\MNIST&SVHN_UCTL.ipynb

• Digit Transfer second experiment

➤ Proposed CTL

Code\Digit transfer\Second experiment\CTL.ipynb

➤ Other SOTAs

CCSA:

Code\Digit transfer\Second experiment\Other SOTAs\CCSA.ipynb

d-SNE:

Code\Digit transfer\Second experiment\Other SOTAs\d_SNE.ipynb

DAG-LDA:

Code\Digit transfer\Second experiment\Other SOTAs\DAG_LDA.ipynb

➤ Baselines

Model 2:

Code\Digit transfer\Second experiment\Baselines\Model 2.ipynb

Model 3:

Code\Digit transfer\Second experiment\Baselines\Model 3.ipynb

UCTL:

Code\Digit transfer\Second experiment\Baselines\UCTL. ipynb

- Sensitivity analysis

Code\Sensitivity analysis\Sensitivity_analysis.ipynb

- Feature visualization

Code\Feature visualization\N=0.ipynb

Code\Feature visualization\N=1and4and7.ipynb