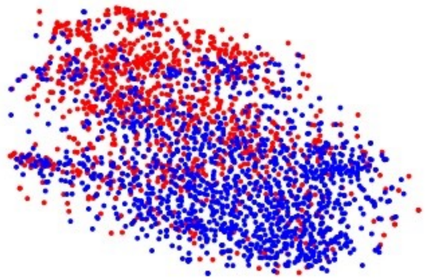
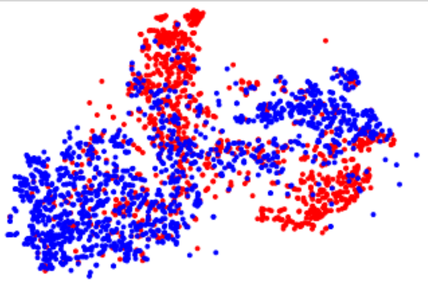
Experiments.....

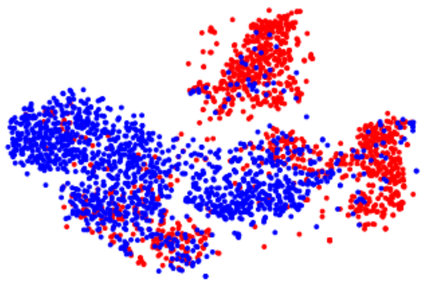
visualize the visual features



(a) Frequency domain sub-network



(b) Pixel domain sub-network



(c) MVNN

- t-SNE show separability of the feature representations: MVNN > pixel > frequency
  - **frequency domain:** positive and negative feature samples overlap a lot
  - **pixel domain:** can learn discriminable features, but the learned features are still twisted together
  - **MVNN:** there is a relatively visible boundary between samples with different labels
- Pixel domain is more effective than frequency domain in distinguishing
- **Fuses information of multiple domains can more distinctive** feature representations, better than single domain

Experiments.....

Application on Multi-modal Fake News Detection

- **EQ3:** Can MVNN help improve the performance of multi-modal fake news detection?
- experiment with three fusing methods as follows:
  - **attRNN (ACM MM, 2017)**
  - **EANN (ACM SIGKDD, 2018)**
  - **MVAE (ACM WWW, 2019)**