**Goal:** Given multiple features, learn the feature dependency to improve the recognition performance.

**Contributions**
- Solve the problem of independent assumption in classifier combination.
- Prove linear combination can model feature dependency under some mild assumptions.
- Develop a novel framework for dependency modeling.
- Propose two methods,LCDM and LFDM, for classifier level and feature level fusion.

**Advantages of the Proposed Methods**
- Without independent assumption.
- Without assumption on feature/classifier distributions.

**Experiments**
- Synthetic data and four real datasets are used for evaluation.
- Results show that both LCDM and LFDM give convincing performances.
- And LFDM gives the best results.