CHAPTER VI

CONCLUSION AND FUTURE WORK

6.1 Conclusion

We have introduced the idea of performing task-based customization. We consider the task in performing customization for classification, sometimes called adaptive classification, which is the field that research in customization is most active on. We introduce three frameworks in performing customization for classification and provide some algorithms according to the frameworks. We then conduct the experiments with real-world datasets, and show the numerical results.

In Chapter 5, we consider the task in performing customization for dimensionality reduction, which could be the preprocess of classification. We propose the framework of customization for dimensionality reduction which seems to be the only sensible one due to the constraint of dimensionality reduction. We further consider the special case of dimensionality reduction which is linear dimensionality reduction in the process of combining result from two dimension reducer which is the only way to perform customization that can be applied to nonlinear dimensionality reduction as well. We propose an algorithm, and provide some theoretical results. We state that the algorithm will yield the optimal result in combining the result from two linear dimensionality reduction. We further state that this optimal algorithm in customization for linear dimensionality reduction can be thought of as a special case of our proposed framework for dimensionality reduction. After that we conduct the numerical results on the algorithm for linear dimensionality reduction to show its performance as the process of dimensionality reduction and as preprocess for classification.

6.2 Future Work

There are many other tasks in machine learning to which we can apply the concept of task-based customization. Other than that there is also room for many frameworks and variations of the algorithm to be created. As shown in

Chapter 5, the wide applicability of task-based customization could result in the weakness for theoretical bit, but by applying additional constraints on the model, it can provide theoretically satisfying result up to a degree. One might argue that restricting the process with additional constraints conflicts to naming it as task-based customization and its mentioned advantage to the model-specific ones, but the main point here is that if the range of the algorithm that this approach can be applied to is wide enough then it still be useful enough in this matter.