Chapter 7

CONCLUSION AND FUTURE WORK

This section of the thesis concludes the methods introduced in this thesis. Here we also recommend the future activities that are examined in this area.

7.1 Conclusions

HPE and HAR is a study with broad applicability in the field of CV. There has been a constant study in this domain right now, yet none of the techniques give an accurate result. Most of the existing approaches fail to estimate and recognize the human pose and its activity.

Chapter 1 introduced the field of Human Pose Estimation and Activity Recognition. It explained the motivation behind researching this field. The problem statement and contribution to the thesis were also introduced.

Chapter 2 gave the theoretical background and foundation of HPE and HAR. It also reviewed the research done in these fields in the past decade. Issues and challenges of the fields were also mentioned. The benchmark databases of both the research areas and the performance metrics were also described in detail.

Chapter 3 proposed two models for 2D HPE. The first model proposed a multi-stage deep learning network for 2D HPE. The second model proposed a detection followed by estimation deep network for 2D HPE. These models mainly focused to give more accurate 2D joint location estimation by handling occlusion problems.

Chapter 4 proposed two deep learning-based models of 3D HPE for a single perspective. The first model has two-stage deep network that uses only spatial data information for 3D HPE. The second model has three-stage deep network that uses both spatial and temporal data information for 3D HPE.

Chapter 5 proposed a deep learning method to 3D HPE from multi-view data input.

Chapter 6 proposed a deep learning-based efficient activity recognition method using RGB and skeleton input data.

7.2 Future Work

In spite of the continuous research in this field, significant issues are existing in this field. The 2D and 3D HPE and HAR methods are highly subjective topics. Even though we considered various approaches to human pose estimation, there are many problems to

be solved. The research work presented in this thesis can be taken further into different directions.

The scope for future works is as follows:

An own benchmarked dataset for suspicious outdoor activities in low light condition using infrared vision cameras may be created, focusing on some suspicious activities like fence climbing, fence wire cutting and unusual movements of armed personal.

Further, new deep learning based models can be proposed benchmarking of the dataset. Some other modalities may also be explored for accurate efficient estimation and recognition of the poses and activities.