Chapter 9
Epilogue

Self-education is the only kind of education there is.

`Issac Asimov`

Congratulations on completing your journey of exploring deep learning with R. Starting with the basics of machine learning, we have explored all the three deep learning architectures and have created our own deep learning applications from scratch. We have learnt many new optimization techniques and understand how they improve convergence in many different ways. We have constructed our own transfer learning models using ConvNets and character generation models using LSTMs.

We have also used the Keras API to create a model up and going quickly. This helps us to understand how we need to shape our hyperparameters, which optimization algorithm to use, and what model architecture is best suited for the data. Thereafter, it is up to our ingenuity and expertise to come up with the best model.

In short, we have now dug our trenches and we have many more miles to go.

9.1 Gathering Experience and Knowledge

One of the best ways to gather experience is by coming up with solutions to real-world problems; and the best way to gather this experience is by trying to solve problems presented at Kaggle (https://www.kaggle.com). There are many organizations who have put up their data on Kaggle to find solutions to their respective problem statements and many of them involve deep learning.

9.1.1   Research Papers

Most of the topics discussed in this book were based on recently published research papers and I owe the authors, my gratitude.

Reading old and new research papers is a smart thing to do. Deep learning research and it's related papers are freely available for everyone to read (unlike other subject areas). Most of the authors who have been cited here have had their papers uploaded on [https://arxiv.org]. arXiv, pronounced as "archive" (*X* is the Greek *chi*), is an open-access server where research papers can be accessed.

It is possible that some of the topics were a bit difficult to grasp but, that should not deter the deep learning enthusiast.

If I can rephrase the catch line from the movie *Forrest Gump*, I would say "Life is like a box of neural nets- you never know what astounding deep learning research paper you get".

9.2   Towards Lifelong Learning

To the discerned reader, a few of learning areas are presented

1. Neural Network Journals

   - *Neural Networks*; Publisher Pergamon Press
   - *Neural Computation*; Publisher MIT Press
   - *IEEE Transactions on Neural Networks*; Publisher Institute of Electrical and Electronics Engineers (IEEE)
   - *International Journal of Neural Systems*; Publisher World Scientific Publishing
   - *International Journal of Neurocomputing*; Publisher Elsevier Science
   - *Neural Network News*; Publisher- AIWeek Inc.
   - *Network: Computation in Neural Systems*; Publisher IOP Publishing Ltd
   - *Connection Science: Journal of Neural Computing, Artificial Intelligence and Cognitive Research*; Publisher- Carfax Publishing
   - *Neural Network News*; Publisher- AIWeek Inc.
   - *The Journal of Experimental and Theoretical Artificial Intelligence*; Publisher Taylor and Francis, Ltd.

2. Neural Network Conferences

   - Neural Information Processing Systems (NIPS)
   - International Joint Conference on Neural Networks (IJCNN)
   - Annual Conference on Neural Networks (ACNN)
   - International Conference on Artificial Neural Networks (ICANN)
   - European Symposium on Artificial Neural Networks (ESANN)
   - Artificial Neural Networks in Engineering (ANNIE)

- International Joint Conference on Artificial Intelligence (IJCAI)
- International Joint Conference on Artificial Intelligence (IJCAI)

3. `keras`

- https://keras.rstudio.com
- https://keras.io
- https://github.com/rstudio/keras
- https://blog.keras.io
- https://tensorflow.rstudio.com/blog.html

9.2.1 Final Words

Once again, thanks for going through this book.

If you have any word of appreciation or otherwise, I would like to know. In either case, it would be a learning.

My best wishes for your journey in deep learning.