

Installation details for R Keras

To implement the deep learning models in R, we may use **keras** for R interface (Chollet et al., 2017). **keras** is a deep-learning framework for **python** that provides a convenient way to define and train almost all kind of deep learning models. **keras** allows models to run on CPU or GPU seamlessly. It has user-friendly API and supports any multi-input, multi-output deep learning model. It works on several backend engines such as **Tensorflow**, **Theano** and **Microsoft Cognitive toolkit** (CNTK). The default backend for **keras** is **TensorFlow**. **TensorFlow** and **keras** can be integrated seamlessly. R **keras**, is 'an interface' to the **Python keras**. In simple terms, this means that the **keras** R package with the interface allows you to enjoy the benefit of R programming while having access to the capabilities of the **Python keras** package. The syntax and structure of the **keras** library in R is very similar to that in **python**.

One may adopt the GPU version of R package **keras** for big data. First install it using `install.packages("keras")` and then use the command `install_keras(tensorflow = "gpu")`.

Please check the CUDA and cuDNN version requirements before installation at <https://www.tensorflow.org/install/gpu>. You may also need to install R package **reticulate** which provides a comprehensive set of tools for interoperability between **python** and R since R **keras** is a wrapper of **python keras**.

The code to implement MLP and CNN in R for a real example is given in the Supplementary documents.

References

Chollet, F., Allaire, J., et al. (2017). R interface to keras, <https://github.com/rstudio/keras>.