



Tensors

Deep Learning Pre-Work

This file is meant for personal use by unmesh_redkar@hotmail.com only.
Sharing or publishing the contents in part or full is liable for legal action.

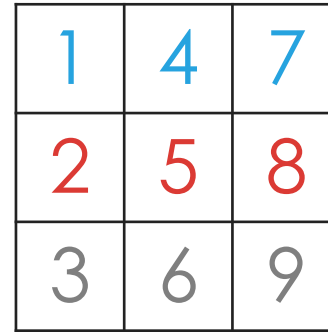
Tensors



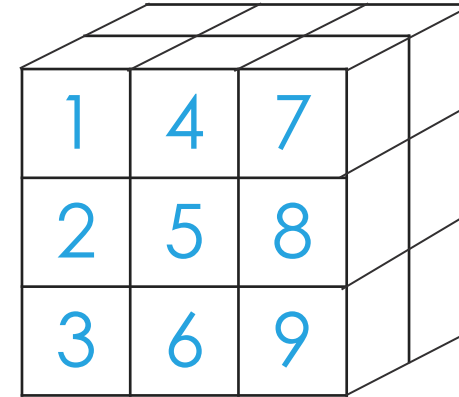
Scalar



Vector



Matrix



Cube

Tensors



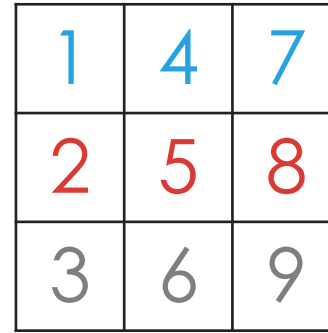
Scalar
Tensor
rank 0

e.g.,



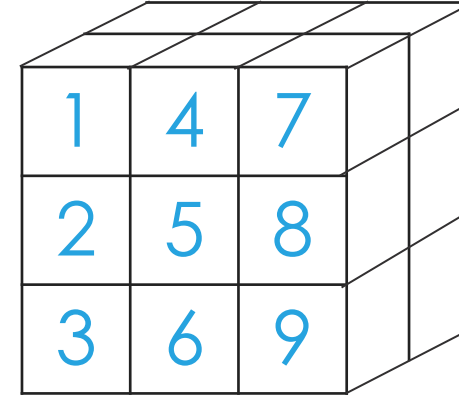
Vector
Tensor
rank 1

[3]



Matrix
Tensor
rank 2

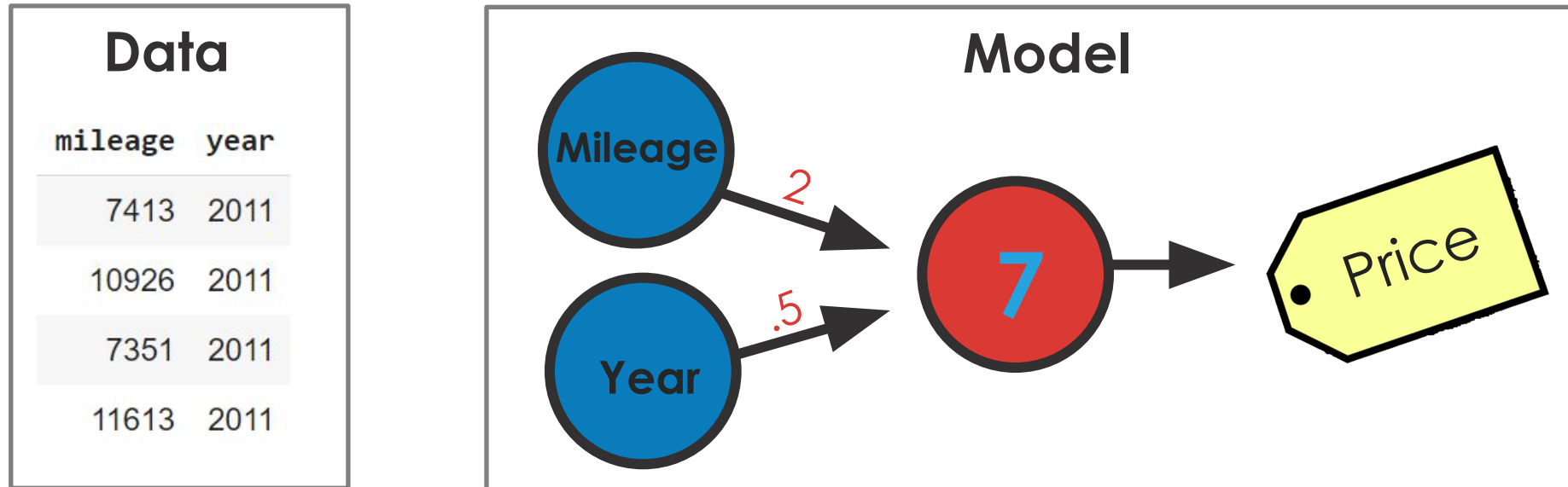
[1,3]



Cube
Tensor
rank 3

[1,3,1]

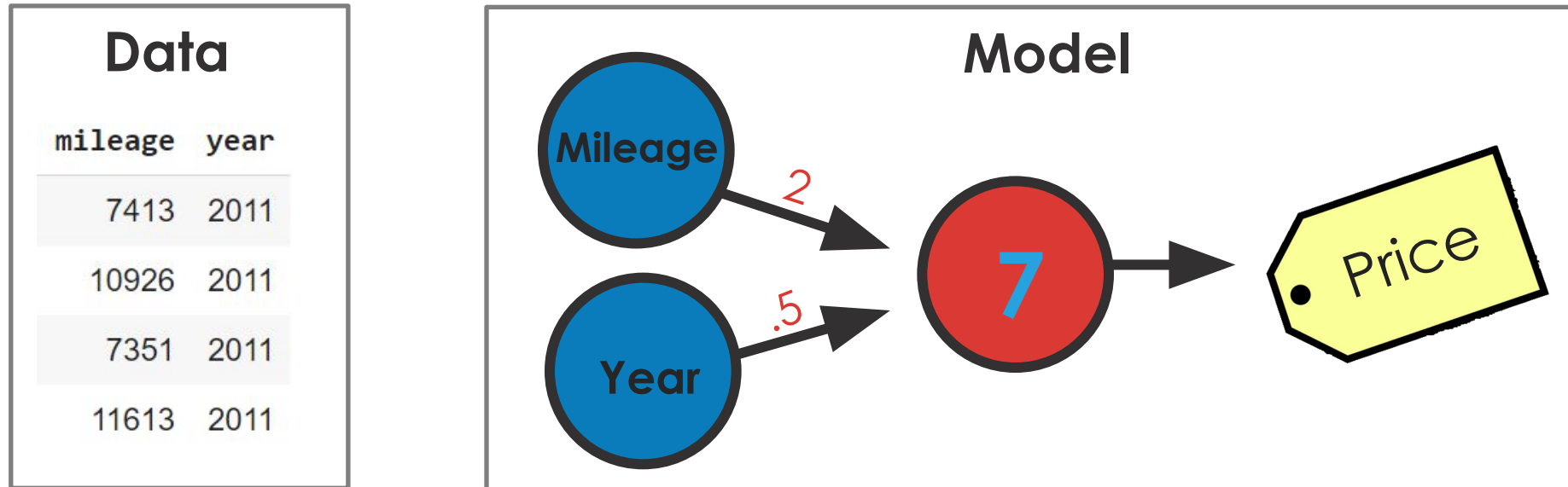
Tensors in Deep Learning



This file is meant for personal use by unmesh_redkar@hotmail.com only.

Sharing or publishing the contents in part or full is liable for legal action.

Tensors in Deep Learning



Equation

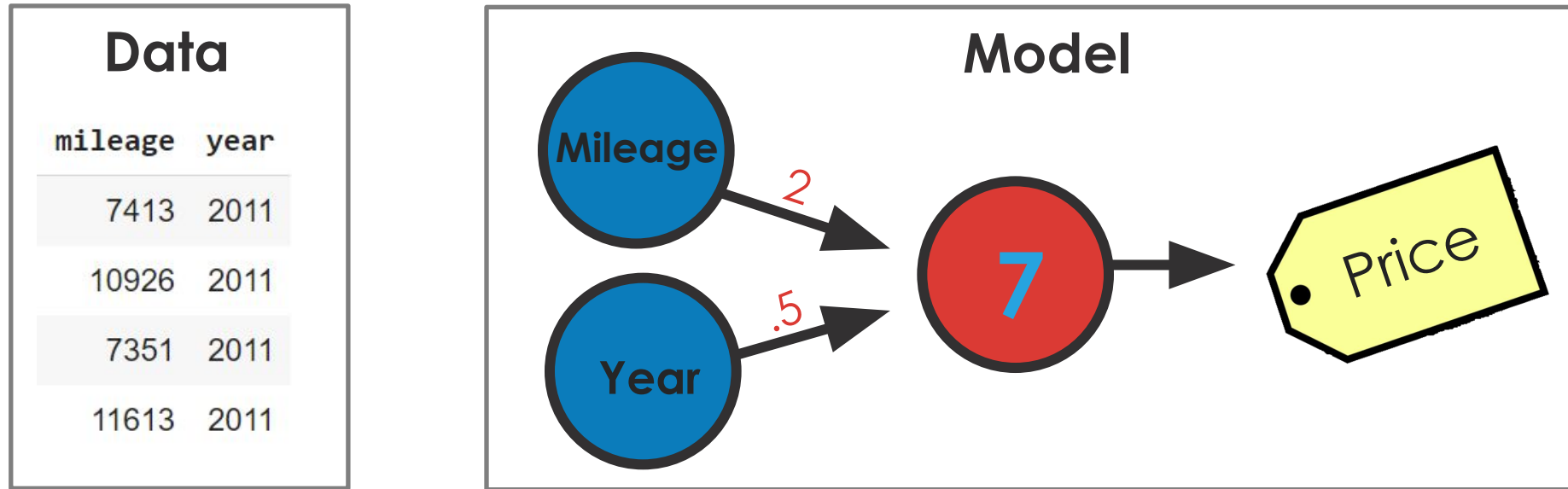
$$X * \text{Weight} + \text{Bias}$$

$$\begin{pmatrix} 7,413 & 2011 \\ 10,926 & 2011 \\ 7351 & 2011 \\ 11,613 & 2011 \end{pmatrix} * \begin{pmatrix} 2 \\ .5 \end{pmatrix} + 7 = \begin{pmatrix} 15,839 \\ 22,865 \\ 15,714 \\ 22,239 \end{pmatrix}$$

This file is meant for personal use by unmesh_redkar@hotmail.com only.

Sharing or publishing the contents in part or full is liable for legal action.

Tensors in Deep Learning



Tensor rank 2

Tensor rank 1

Tensor rank 0

Tensor rank 1

$$\begin{bmatrix} 7,413 & 2011 \\ 10,926 & 2011 \\ 7351 & 2011 \\ 11,613 & 2011 \end{bmatrix} * \begin{bmatrix} 2 \\ .5 \end{bmatrix} + 7 = \begin{bmatrix} 15,839 \\ 22,865 \\ 15,714 \\ 22,239 \end{bmatrix}$$

This file is meant for personal use by unmesh_redkar@hotmail.com only.

Sharing or publishing the contents in part or full is liable for legal action.

Tensors in Deep Learning



This file is meant for personal use by unmesh_redkar@hotmail.com only.

Sharing or publishing the contents in part or full is liable for legal action.



TensorFlow

Tensor rank 2

Tensor rank 1

Tensor rank 0

Tensor rank 1

$$\begin{bmatrix} 7,413 & 2011 \\ 10,926 & 2011 \\ 7351 & 2011 \\ 11,613 & 2011 \end{bmatrix} * \begin{bmatrix} 2 \\ .5 \end{bmatrix} + 7 = \begin{bmatrix} 15,839 \\ 22,865 \\ 15,714 \\ 22,239 \end{bmatrix}$$

This file is meant for personal use by unmesh_redkar@hotmail.com only.

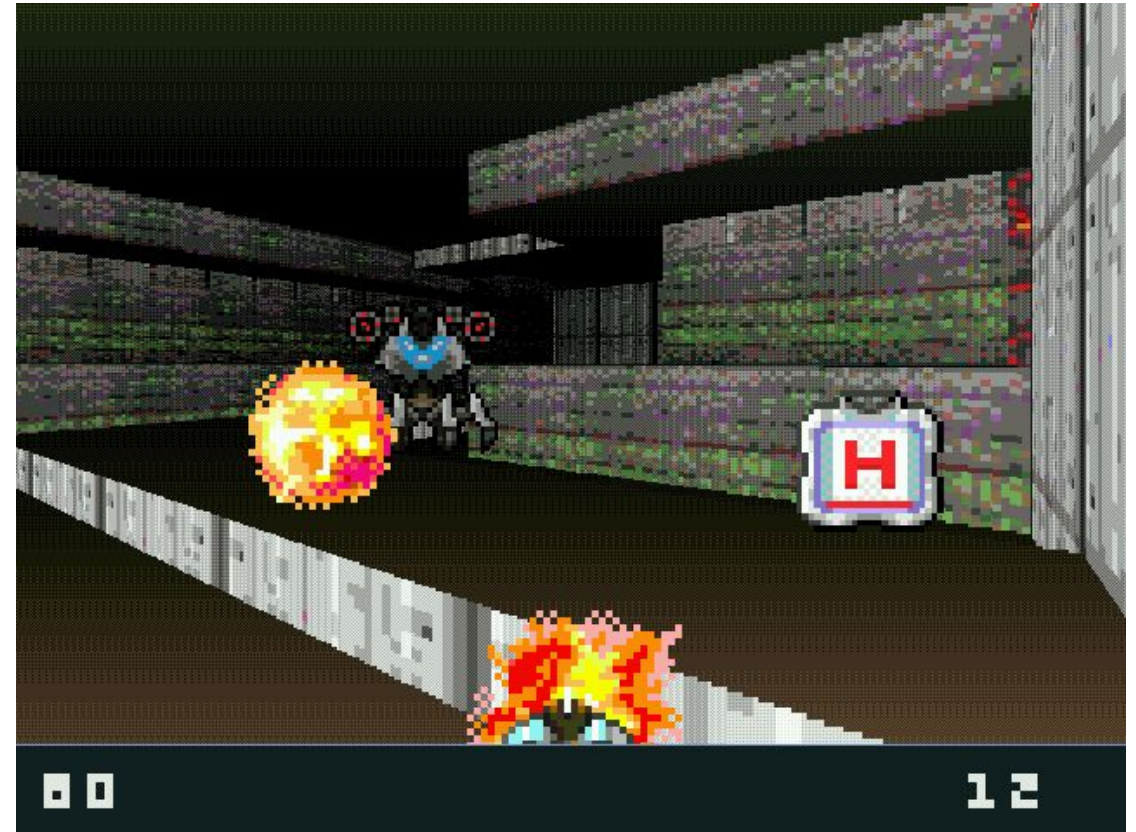
Sharing or publishing the contents in part or full is liable for legal action.

Graphical Processing Units

GPUs



Source: Wikimedia commons



Source: Wikimedia commons

This file is meant for personal use by unmesh_redkar@hotmail.com only.

Sharing or publishing the contents in part or full is liable for legal action.