1819-108-C1-W10-01

Rainers Leons Justs

April 1, 2019

- The sigmoid function (or logistic)

$$\phi(x) = \frac{1}{1 + exp(-x)}$$

- The hyperbolic tangent function ("tanh")

$$\phi(x) = \frac{exp(x) - exp(-x)}{exp(x) + exp(-x)} = \frac{exp(2x) - 1}{exp(2x) + 1}$$

- The hard threshold function

$$\phi_\beta(x) = 1_{x \geq \beta}$$

- The Rectified Linear Unit (ReLU) activation function

$$\phi(x) = max(0, x)$$

Here is a schematic representation of an artificial neuron where $\sum = \langle \omega_j, x \rangle + b_j$

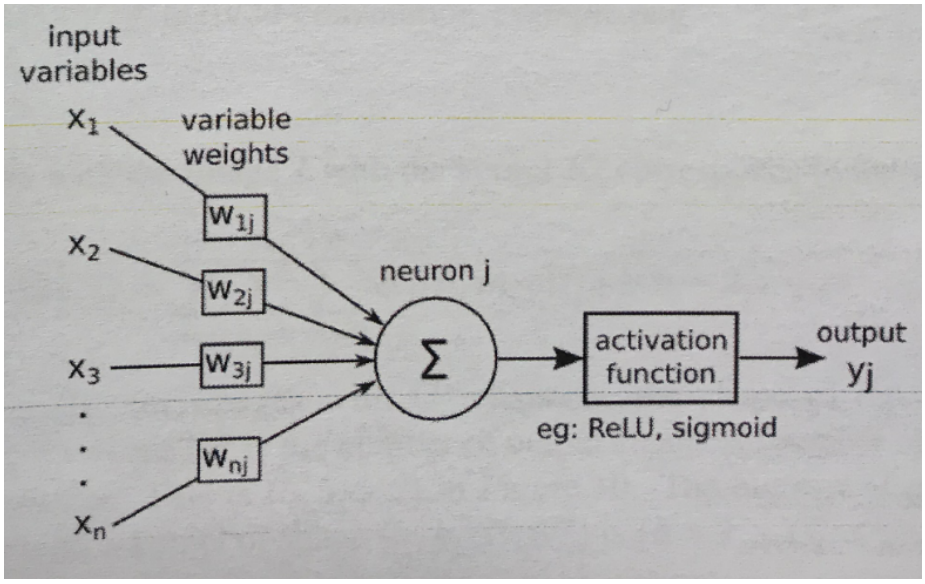

Figure 1: source: andrewjames turner.co.uk

The Figure 2 represents the activation described above.

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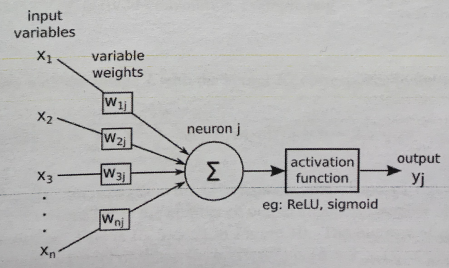

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The Figure 2 represents the activation function described above.

```
    \documentclass{article}
\usepackage[utf8]{inputenc}
\usepackage{graphicx}
\usepackage{float}

\title{1819-108-C1-W10-01}
\author{Rainers Leons Justs}
\date{\today}

\begin{document}

\maketitle

\newpage
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```
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\end{itemize}

\noindent Here is a schematic representation of an artificial neuron where
$\sum = \langle \omega_{j},x \rangle + b_{j}$

\begin{figure}[H]
    \centering
    \includegraphics[width=\linewidth]{zgy.PNG}
    \caption{source: andrewjames turner.co.uk}
    \label{Figure 1:}
\end{figure}

\noindent The Figure 2 represents the activation described above.

\newpage

\begin{figure}
    \centering
    \includegraphics[width=\linewidth, angle=270]{zgy2.jpg}
\end{figure}

\end{document}
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