Image

Viktors Djakonovs

April 2019

Originals variants

- 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

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

- The Rectified Linear Unit (ReLU) activation function

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

Here is a schematic representation of an artificial neuron where $\Sigma = \langle w_j, x \rangle + b_j$.

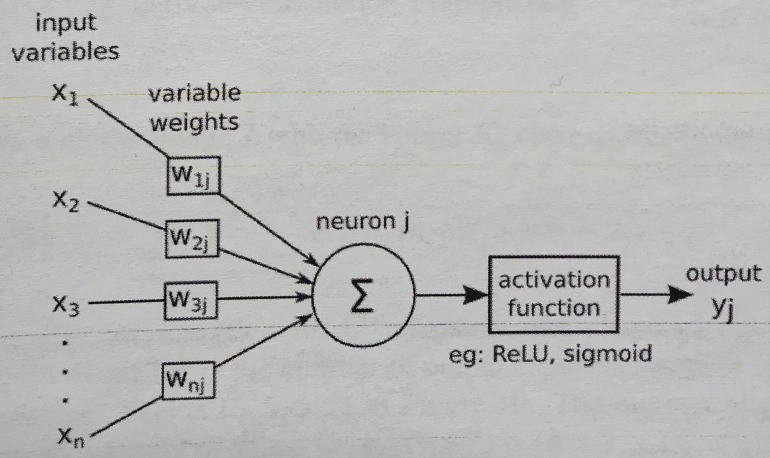

Figure 1: source: andrewjames turner.co.uk

Mans variants

- 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 Liner unit (ReLU) activation function

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

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

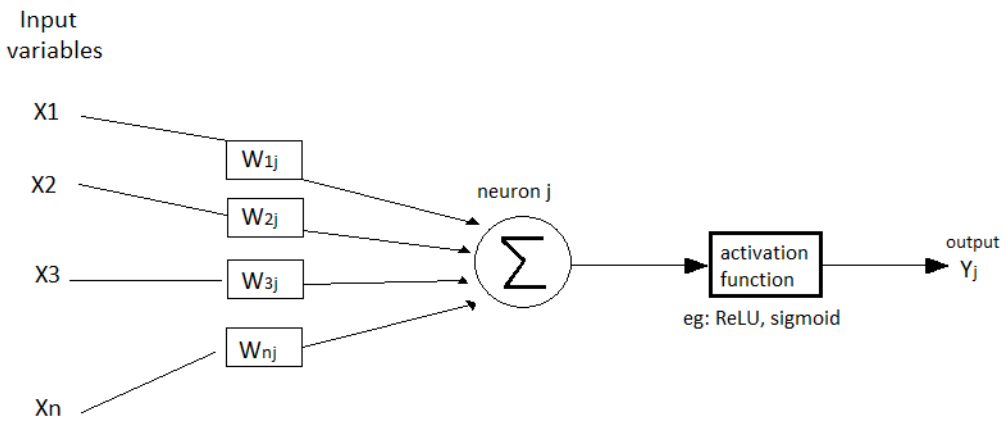

Figure 1: source: andrewjames turner.co.uk

Darba kods

```
\documentclass{report}
\usepackage[utf8]{inputenc}
\usepackage{incgraph,tikz}
\usepackage{graphicx}
\title{Image}
\author{Viktors Djakonovs}
\date{April 2019}


\begin{document}
\maketitle
\pagebreak

\section*{Originals variants}
\includegraphics[scale=0.15]{IMG_1205.jpg}
\pagebreak
\section*{Mans variants}
\begin{itemize}
\item The sigmoid function(or logistic)
\begin{center}
    $\phi(x)=\frac{1}{1+exp(-x)}.$
\end{center}

\item The hyperbolic tangent function('tanh')
\begin{center}
$\phi(x)=\frac{exp(x)-exp(-x)}{exp(x)+exp(-x)}=\frac{exp(2x)-1}{exp(2x)+1}.$
\end{center}
\item The hard threshold function
\begin{center}
    $\phi^{}_{\beta}(x)=1^{}_{x\geq\beta.}$
\end{center}

\item The Rectified Liner unit (ReLU) activation function
\begin{center}
    $\phi(x)=max(0,x).$
\end{center}
\end{itemize}

Here is a schematic representation of a artificial neuron where $\sum=\langle
w,x \rangle +b^{}_{j}.$\\
\includegraphics[scale=0.8]{W10-01.png}
\pagebreak
\section*{Darba kods}
```