Neural Network & Deep Learning

Task 1

|  |  |  |
| --- | --- | --- |
| **CS\_H10** | | |
| CS | 20191700734 | هدى زين العابدين احمد ابراهيم |
| CS | 20191700733 | هبة الله علي سيد محمود |
| CS | 20191700735 | هدى سامي محب عبد الحافظ |
| CS | 20191700089 | أروى علاء الدين عبد الحميد ابو السعود |
| CS | 20191700280 | ساره محمود كمال عبدالوهاب |

|  |  |
| --- | --- |
| **Visualization** | **Analysis** |
| Chart, scatter chart  Description automatically generated | Linear separable between Gentoo and Adelie.  Linear separable between Chinstrap and Adelie.  Non-linear separable between Chinstrap and Gentoo. |
| Chart, scatter chart  Description automatically generated | Linear separable between Gentoo and Adelie.  Non-linear separable between Chinstrap and Gentoo.  Non-linear separable between Adelie and Chinstrap. |
| A picture containing chart  Description automatically generated | Non-linear separable between Gentoo and Adelie.  Non-linear separable between Chinstrap and Gentoo.  Non-linear separable between Adelie and Chinstrap. |
| Chart, scatter chart  Description automatically generated | Non-linear separable between Gentoo and Adelie.  Non-linear separable between Adelie and Chinstrap.  Linear separable between Chinstrap and Gentoo. |
| Chart, scatter chart  Description automatically generated | Linear separable between Gentoo and Adelie.  Linear separable between Chinstrap and Gentoo.  Non-linear separable between Adelie and Chinstrap. |
| Chart  Description automatically generated with medium confidence | Non-linear separable between Gentoo and Adelie.  Non-linear separable between Adelie and Chinstrap.  Linear separable between Chinstrap and Gentoo. |
| Chart, scatter chart  Description automatically generated | Linear separable between Gentoo and Adelie.  Linear separable between Chinstrap and Gentoo.  Non-linear separable between Adelie and Chinstrap. |
| Text  Description automatically generated with low confidence | Linear separable between Gentoo and Adelie.  Non-linear separable between Chinstrap and Gentoo.  Non-linear separable between Adelie and Chinstrap. |
| Chart, scatter chart  Description automatically generated | Linear separable between Gentoo and Adelie.  Non-linear separable between Chinstrap and Gentoo.  Non-linear separable between Adelie and Chinstrap. |
| Chart  Description automatically generated | Non-linear separable between Gentoo and Adelie.  Non-linear separable between Chinstrap and Gentoo.  Non-linear separable between Adelie and Chinstrap. |

The features that achieved the highest accuracy, which is **100%**, after running the algorithm with **learning rate = 0.01, epochs = 100** are:

|  |  |
| --- | --- |
| **Features** | **Classes** |
| bill\_length\_mm & bill\_depth\_mm | with classes 🡪  Adelie & Gentoo |
| bill\_length\_mm & body\_mass\_g | With classes 🡪  Chinstrap & Gentoo. |
| bill\_depth\_mm & flipper\_length\_mm | With classes 🡪  Gentoo & Adelie.  Chinstrap & Gentoo. |
| bill\_depth\_mm & gender | With classes 🡪  Chinstrap & Gentoo. |
| bill\_depth\_mm & body\_mass\_g | With classes 🡪  Chinstrap & Gentoo. |