

Task 1 – Dataset (Penguins)

Neural Network



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|  |  |
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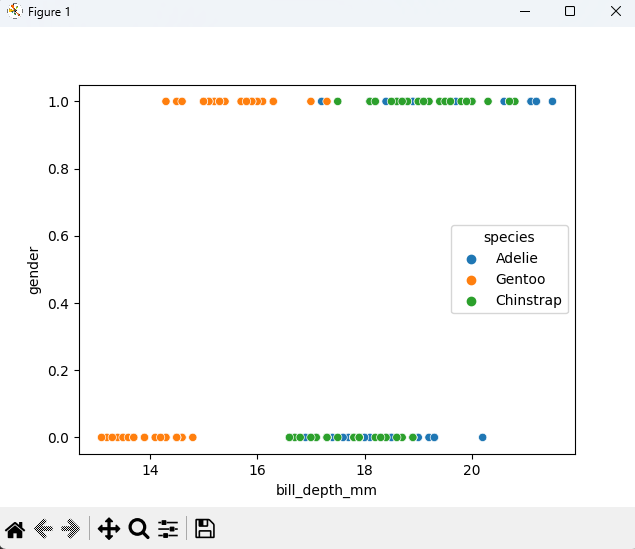


Figure 1 The data above using features "Gender " and “Bill Depth" shows that:

1. between class "Gentoo" & "Chinstrap": there is a line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is no line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly.

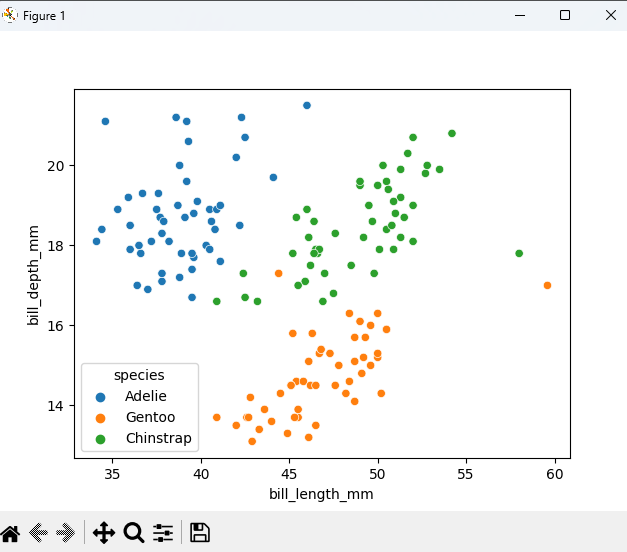


Figure 2 The data above using features "Bill length " and “Bill Depth" shows that:

between class "Gentoo" & "Chinstrap": there is a line to separate them linearly.

between class "Gentoo" & "Adelie": there is a line to separate them linearly.

between class "Adelie" & "Chinstrap": there is no line to separate them linearly.

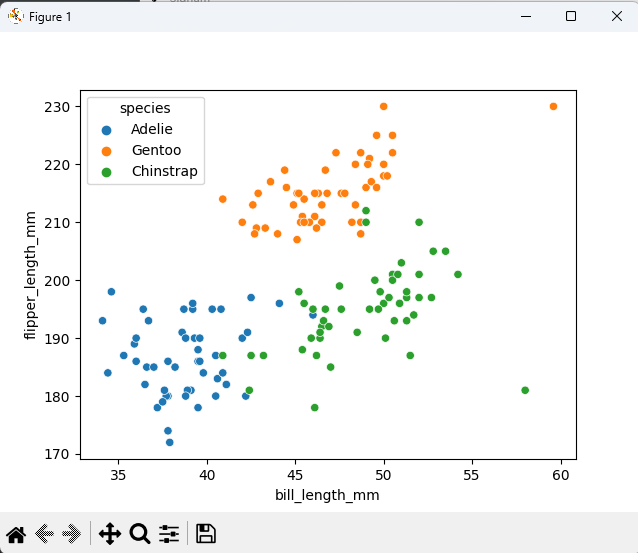


Figure The data above using features " Bill Length" and "Flipper Length " shows that:

1. between class "Gentoo" & "Chinstrap": there is no line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is no line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly.

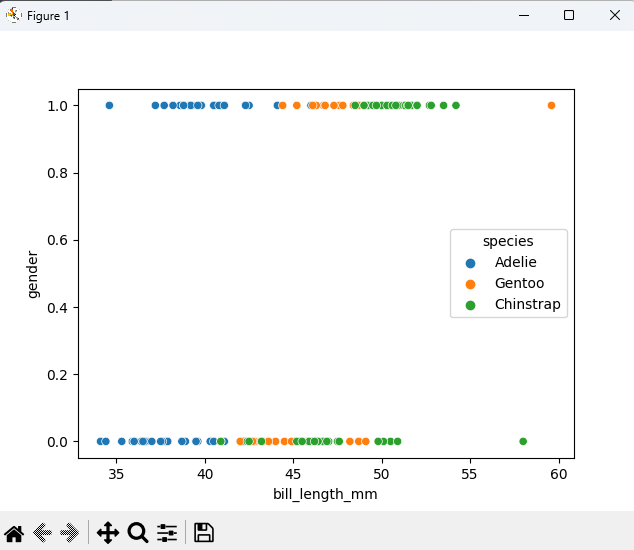


Figure The data above using features "Bill length " and “Gender" shows that:

1. between class "Gentoo" & "Chinstrap": there is no line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is no line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly.

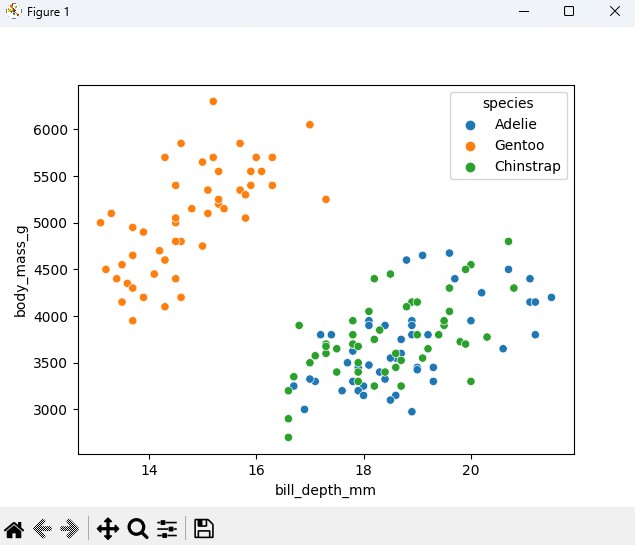


Figure The data above using features " Bill Depth" and "Body Mass " shows that:

1. between class "Gentoo" & "Chinstrap": there is a line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is a line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly

Chart, scatter chart

Description automatically generated

Figure The data above using features " Bill Length" and "Body Mass " shows that:

1. between class "Gentoo" & "Chinstrap": there is no line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is no line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly

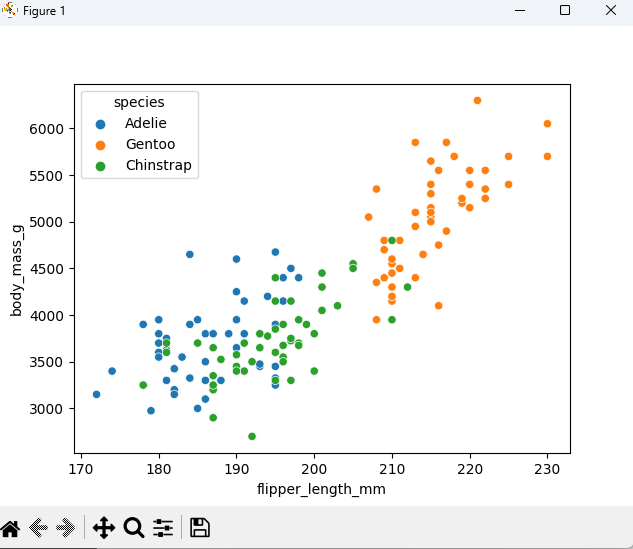


Figure The data above using features " Flipper Length" and "Body Mass " shows that:

1. between class "Gentoo" & "Chinstrap": there is no line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is no line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly

Graphical user interface

Description automatically generated

Figure The data above using features " Gender" and "Body Mass " shows that:

1. between class "Gentoo" & "Chinstrap": there is no line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is no line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly

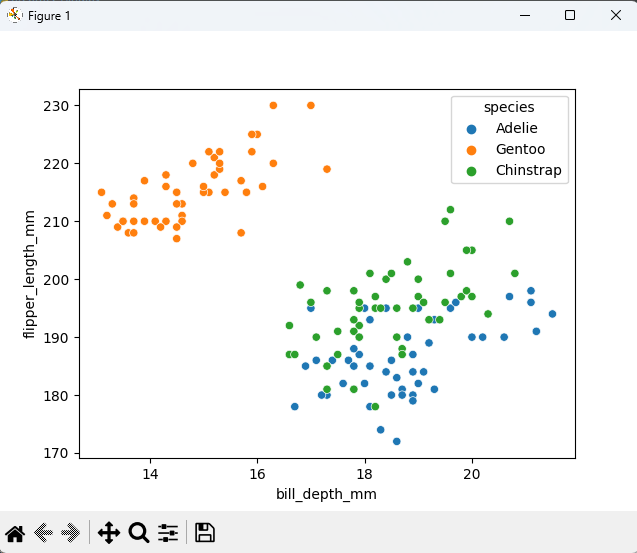


Figure The data above using features " Flipper Length" and "Bill Depth " shows that:

1. between class "Gentoo" & "Chinstrap": there is a line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is a line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly

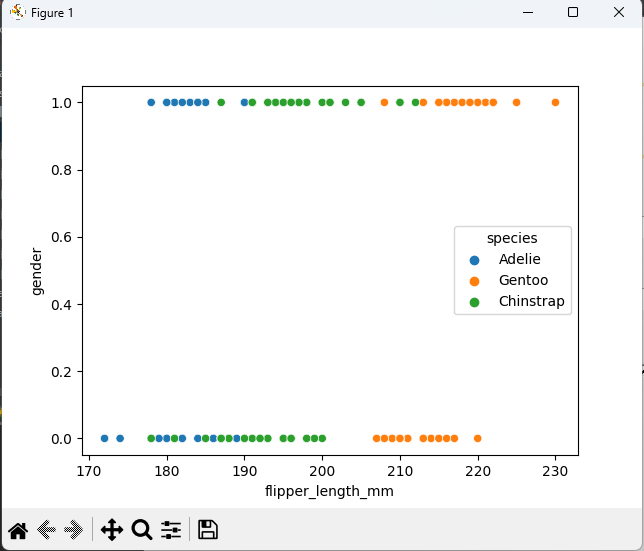


Figure The data above using features " Flipper Length" and "Bill Depth " shows that:

1. between class "Gentoo" & "Chinstrap": there is no line to separate them linearly.
2. between class "Gentoo" & "Adelie": there is a line to separate them linearly.
3. between class "Adelie" & "Chinstrap": there is no line to separate them linearly

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Analysis:

the features that achieved the highest accuracy after running our algorithm:

**Adelie" and “Chinstrap:**

* from this screenshot we could see that the best features to discriminate between "Adelie" and “Chinstrap” classes are “bill\_length\_mm” and “bill\_depth\_mm” which get 100% accuracy. We can conclude that with these features we can linearly separate the two classes.

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated**“Gentoo" and “Chinstrap”:**

* from this screenshot we could see that the best features to discriminate between " **Gentoo**" and “Chinstrap” classes are “bill\_length\_mm” and “body\_mass\_g” which get 97.5% accuracy. Also features “flipper\_length\_mm” and “gender” get 97.5% accuracy.

Graphical user interface, text, application, email

Description automatically generated

**“Gentoo" and “Adelie”:**

* from this screenshot we could see that the best features to discriminate between "Gentoo" and “Chinstrap” classes are “bill\_length\_mm” and “flipper\_length\_mm” which get 97.5% accuracy. Also features “flipper\_length\_mm” and “gender” get 97.5% accuracy.

Graphical user interface, text, application, email

Description automatically generated