

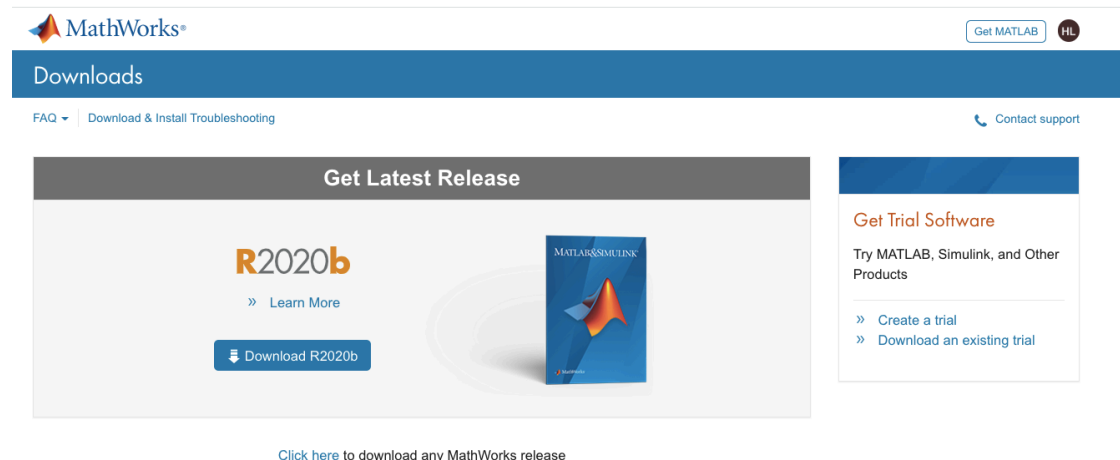
MATLAB Tutorial

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Install MATLAB on your laptop

- Google “MATLAB download”
- Download and install MATLAB (the latest version R2020b)
- Activate by input your uni email and password



Why MATLAB

- Easy to understand
- Easy to program, don't waste your time on programming
- Idea way to design a machine learning software:
 - Implement a prototype by MATLAB
 - Software development

MATLAB interface

- Folder
- Detail
- Command Window
- Workspace
- Command History

Basic operations

- Elementary operations:
 - Math operations: plus, minus, multiplication, division, power, square root, ...
 - Logical operations: greater/less than, not equal, and/or, ...
- Variables:
 - Number
 - String
 - Vector
 - Matrix
 - Display variables

Data manipulation

- Matrix size
- Save/load data
- Clear
- Access/append/remove row/column of matrix
- Put a matrix into a vector
- Reshape matrix

Data computation

- Matrices elementary addition/subtraction/multiplication
- Matrices multiplication
- Matrices transpose
- Function: max/min/sum/prod/floor/ceil
- Function: find
- Function: magic/rand
- Function: eye

Plotting data

- sine/cosine
- plot label/title/legend
- subplot
- axis range

Control statement

- for loop
- while
- if else
- Write your own function and script

Vectorization

- Consider the hypothesis in linear regression, we can have two options to implement:

$$h_{w,b}(x) = \sum_{j=1}^n w_j x_j + b = wx + b$$