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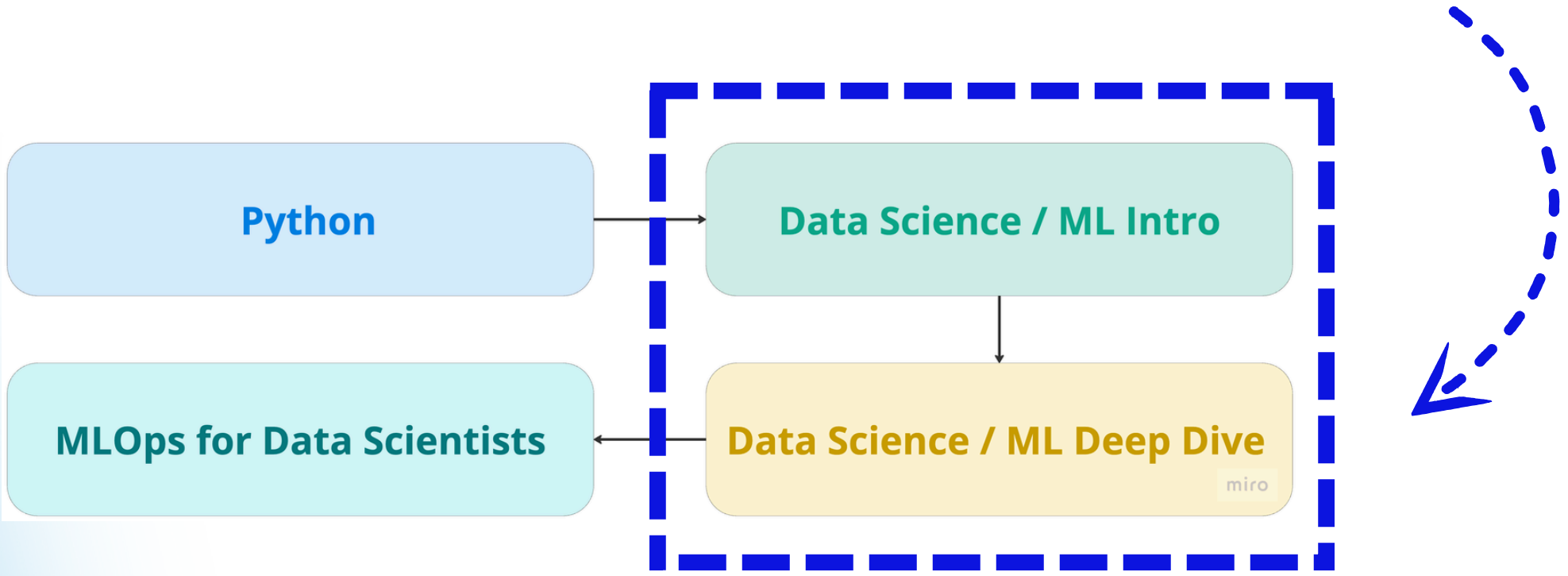
ML ROADMAP with LINKS from JUNIOR TO SENIOR



([Link to the full roadmap](#) at the end!)

TIMUR BIKMUKHAMETOV

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The entire roadmap can be downloaded and completed for ABSOLUTE FREE.

LINK TO THE DS ROADMAP

Ok, let's check the breakdown!

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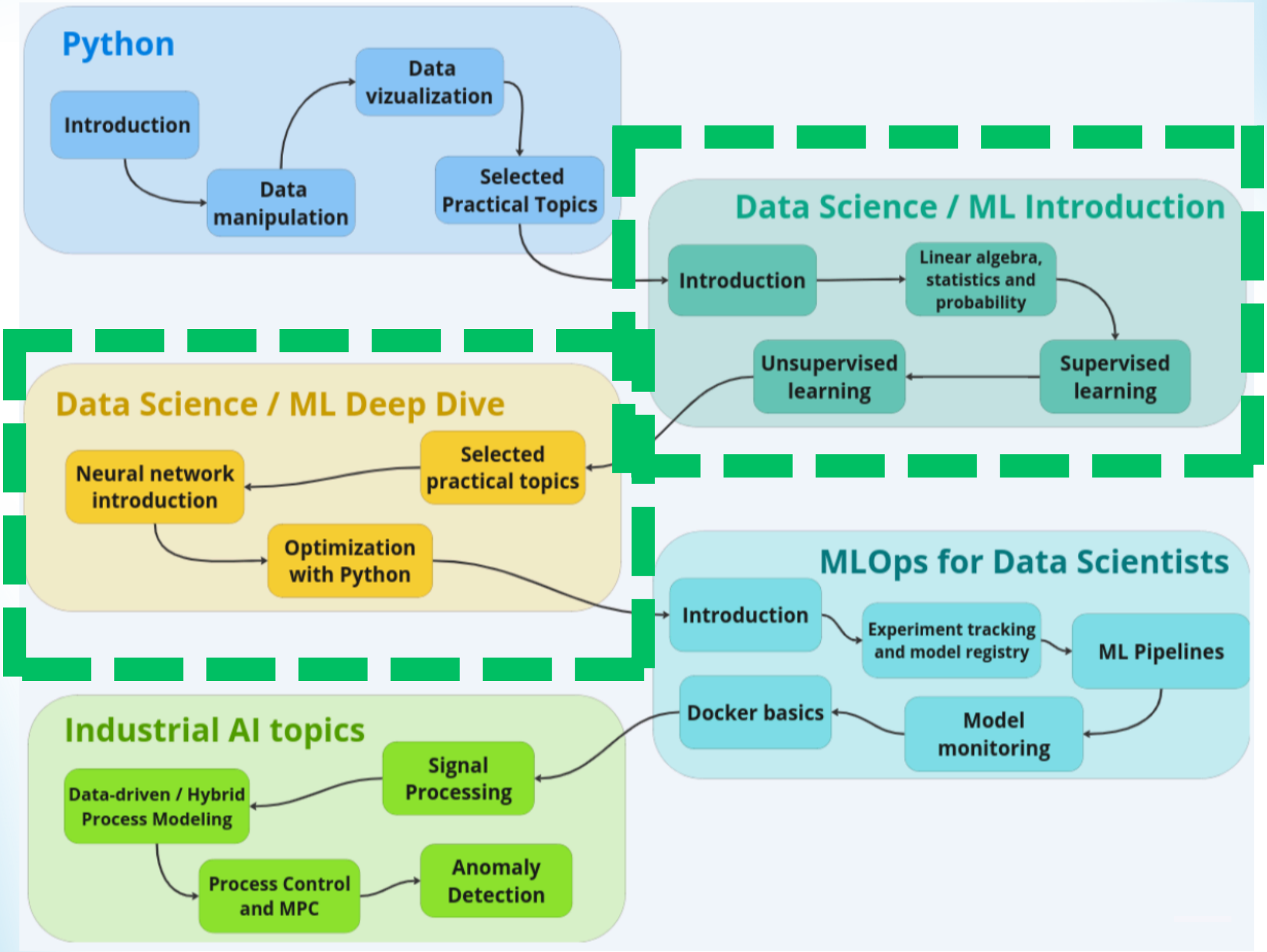
From the full roadmap, here we cover the ML part.



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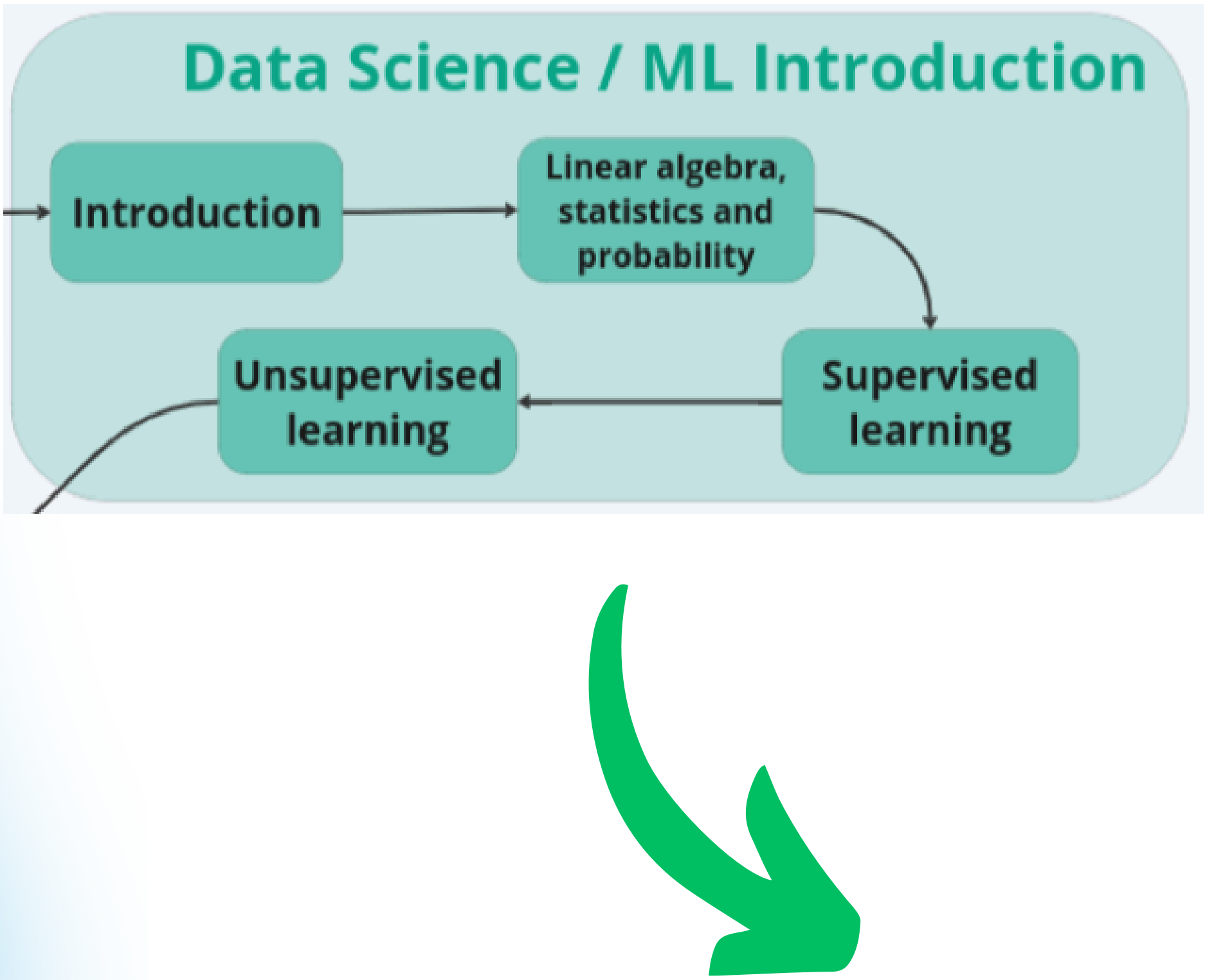
Let’s start from Introduction!



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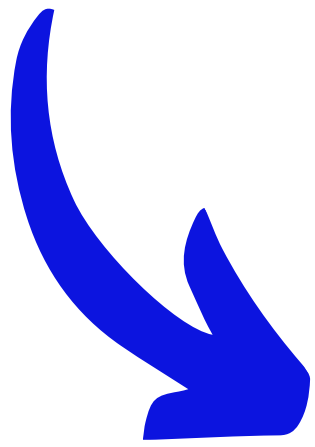
1 Introduction

Andrew Ng course: Link

This is a perfect course to get an overview of what machine learning is and what are the two most common problems that are solved by ML: regression and classification.

See next...



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2 Probability, statistics, and linear algebra

Linear Algebra

Step 1
Videos of 3blue1brown about linear algebra: Link

Step 2
Tutorial of Python Linear Algebra by Pablo Caceres: Link

Probability and Statistics

Step 1
Statistics Crash Course by Adriene Hill: Link

Step 2
Learn Statistics with Python by Ethan Weed: Link

See next...

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3 Supervised learning

Linear regression

Step 1. Intro theory

Nando de Freitas lectures at UBC

- Lecture 1
- Lecture 2

Step 2. Python Implementation:

- Closed-form linear regression implementation
- Linear regression with gradient descent

Step 3. Regularization in linear regression

1: Nando de Freitas lectures at UBC

- Lecture 1
- Lecture 2

2: Visual explanation with code

- Explanation 1
- Explanation 2

Step 4. Sklearn tutorial with Lasso model

- LINK

See next...

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3 Supervised learning

Logistic regression

Step 1. Intro

Logistic regression topic of mlcourse.ai

- LINK

Step 2. Odds ratio as weights interpretability

- LINK

See next...

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3 Supervised learning

Gradient Boosting

Step 1. Intro

Gradient Boosting topic of mlcourse.ai

- LINK

Step 2. Deeper dive

- Tutorial by Alexey Natekin
- XGBoost original paper

Step 3. Demo playground by Alex Rogozhnikov

- Demo 1
- Demo 2

See next...

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3 Supervised learning

Random Forest

Step 1. Intro

Lectures by Nando de Freitas

- Lecture 1
- Lecture 2
- Lecture 3

Step 2. Bagging topic on mlcourse.ai

- LINK

1.9

See next...

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3 Supervised learning

k Nearest Neighbours (k-NN)

Guide by Mustafa Murat ARAT

- LINK

See next...

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4 Unsupervised learning

Clustering

k-Means

Guide by Mustafa Murat ARAT

- LINK

DBSCAN

Detailed Applied Guide

- LINK

See next...

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4 Unsupervised learning

Dimentionality Reduction

PCA

- Material from Sebastian Rashka

t-SNE

- What is it and how to run it in Python
- How to use t-SNE effectively (with great avisualizations)

UMAP

- Detailed guide

See next...

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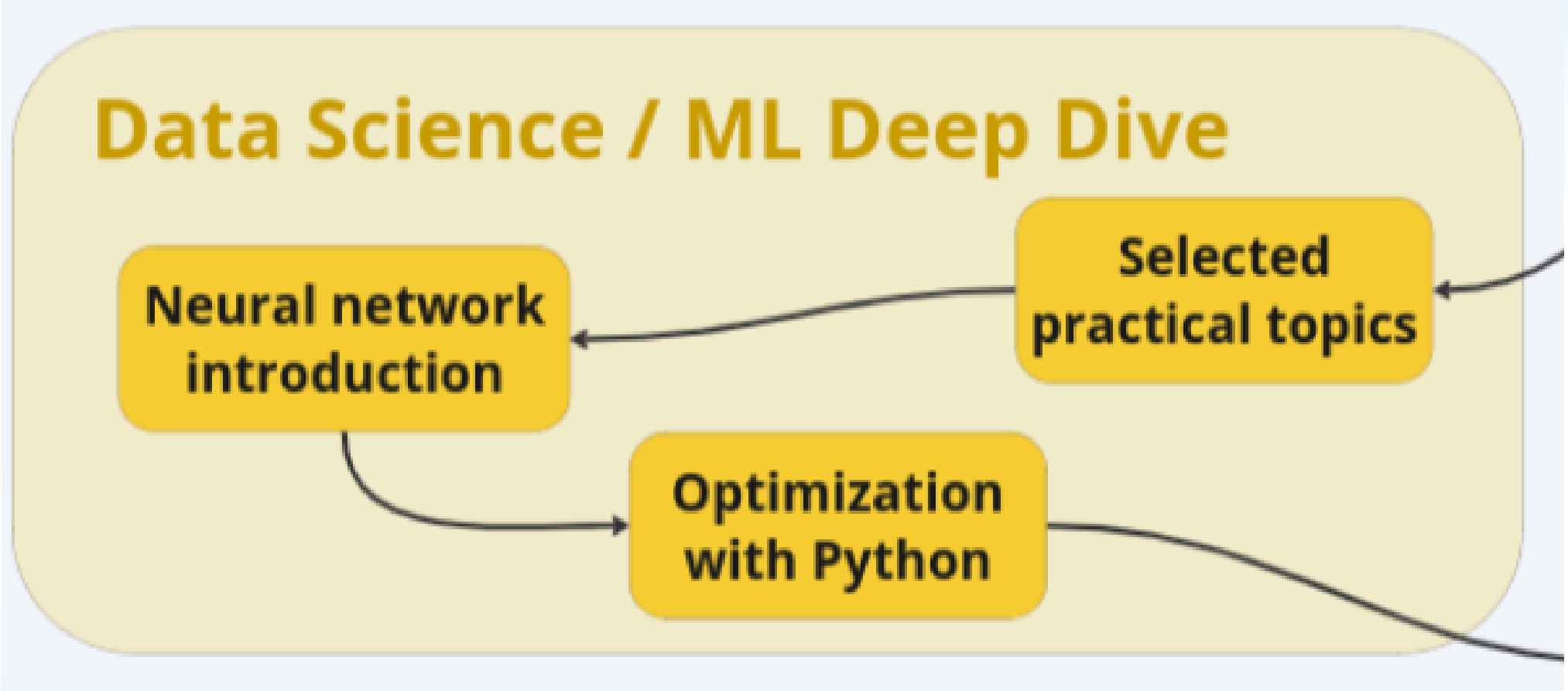
Now, deeper dive...



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1 Selected Practical Topics

Feature selection

- Detailed Guide

Feature importance

Linear Methods

- Guide 1
- Guide 2

Tree-based Methods

- Video Guide

Permutation feature importance

- Guide

SHAP

- Guide

See next...

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1 Selected Practical Topics

Model metrics evaluation

Regression Metrics

- Detailed Article

Classification Metrics

- Detailed Article

Cross Validation

- Detailed Article

See next...

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2 Neural Networks Introduction

5 Courses of Coursera Deep Learning Specialization

- LINK

To get an intro into the topic, Andrew Ng's specialization is still great. He goes step-by-step and I guarantee you will understand the concept. From that, you can go deeper depending on the domain you are interested in.

See next...

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3 Optimization with Python

Introduction to mathematical optimization with Python

- Detailed Guide

Bayesian Optimization

- Playground with theory explanation
- Deep theory dive by Nando de Freitas

Optimization with SciPy

- Link 1
- Link 2
- Link 3
- Link 4

See next...

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3 Optimization with Python

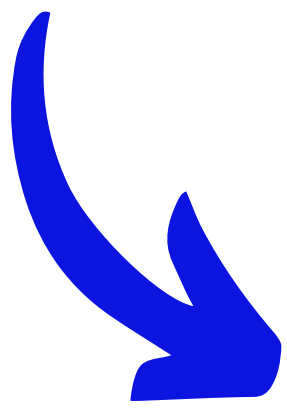
Playground

- Detailed Guide

Additional Resources

- Book by Nocedal
- Extensive list of optimization resources

See next...



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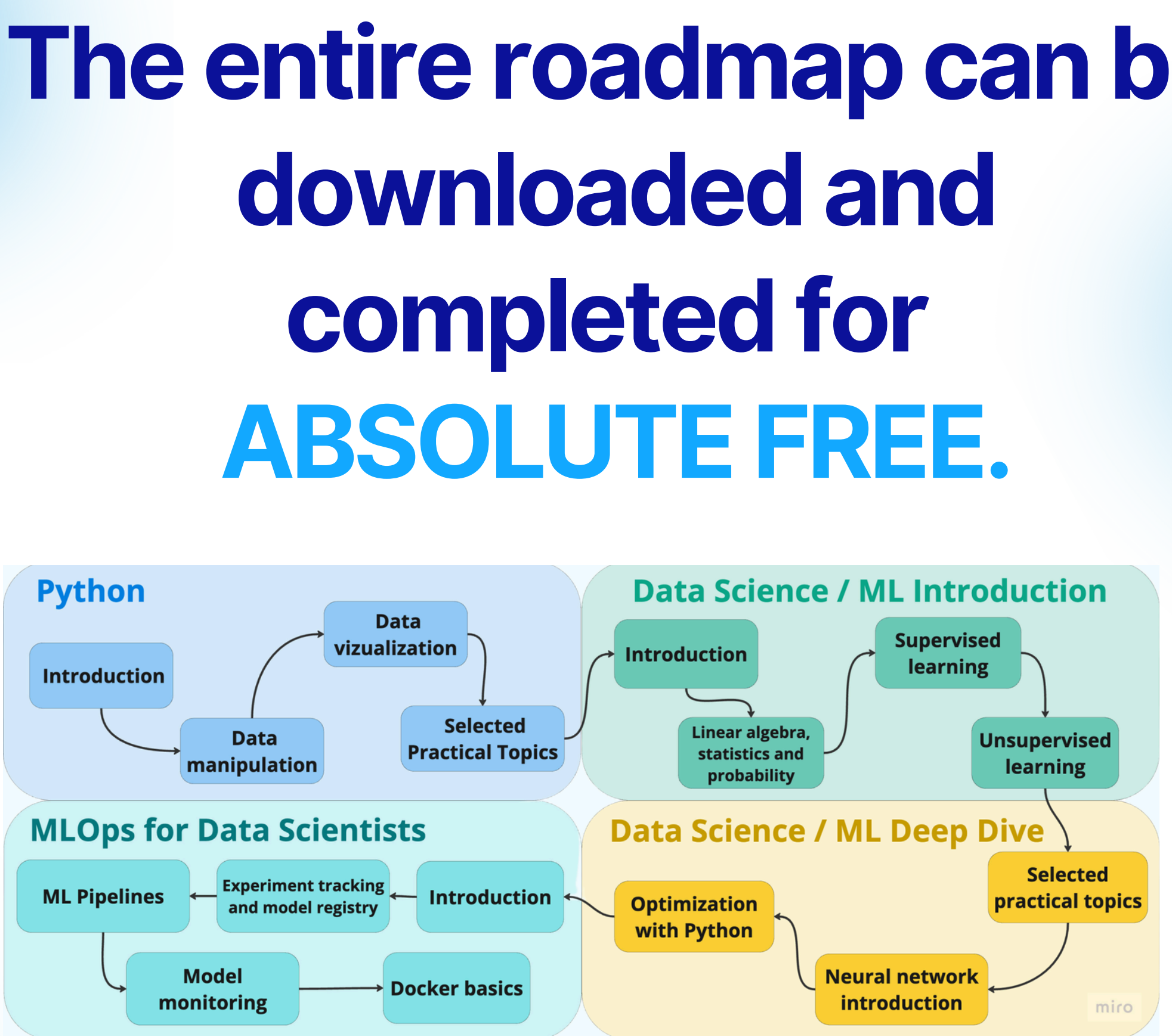

1.9

LINK TO THE DS ROADMAP

Finally...

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so I know that the content resonates!

TIMUR BIKMUKHAMETOV