Artificial Intelligence

Fundamentals with Machine Learning and Python

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Course Introduction

Course Description

- IT2301-318 **ปัญญาประดิษฐ์ขั้นพื้นฐาน**
- (**Artificial Intelligence Fundamentals**)
- **3**(3-0-6)
- รายวิชาต้องศึกษาก่อน/ Prerequisite:
  - IT2301-30 **โครงสร้างข้อมูลและการวิเคราะห์ขั้นตอนวิธี**
    (Data Structure and Algorithm Analysis)

Course Description

- The principle of artificial intelligence fundamental, artificial intelligence problem solving such as heuristics, problem solving and planning etc, problem and knowledge replacement, apply to others; gaming, expert systems, natural languages, theory verification, and robotic control
- แนวความคิดเบื้องต้นเกี่ยวกับปัญญาประดิษฐ์วิธีการแก้ปัญหาทางปัญญาประดิษฐ์แบบต่างๆ เช่น การใช้วิธีการฮิวริสติกแบบต่างๆ การค้นหาคำตอบและการวางแผนงาน เป็นต้น การแทนความรู้ในการแก้ปัญหา ตัวอย่างการประยุกต์ใช้ในด้านต่าง ๆ เช่น การเล่นเกม ระบบผู้ชำนาญการ การปฏิบัติการเกี่ยวกับการใช้ภาษาธรรมชาติ การพิสูจน์ทฤษฎีและการควบคุมหุ้นยนต์

Artificial Intelligence Fundamental + Machine Learning + Python

Artificial Intelligence Fundamentals with Machine Learning and Python

What to learn

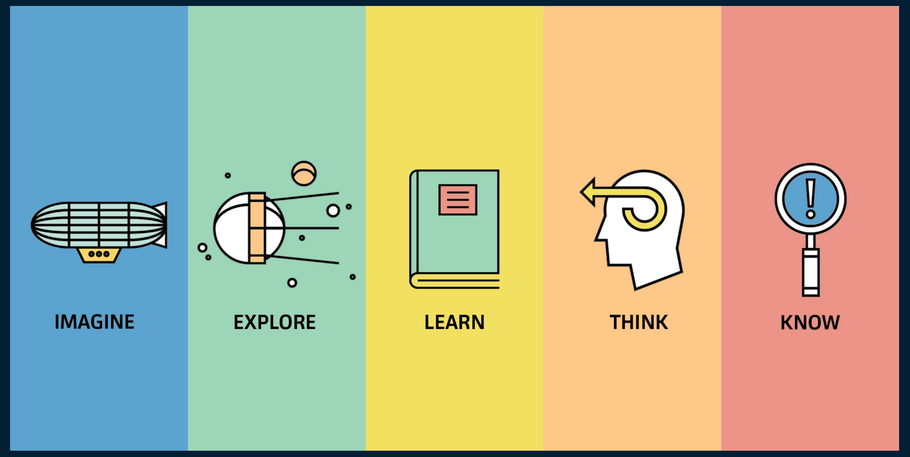
- Introduction to AI
- Setup work environment
- Concept Learning
- The Machine Learning Landscape
- End-to-End Machine Learning Project
- Classification
- Training Models
- Support Vector Machines
- Decision Trees
- Ensemble Learning and Random Forests
- Dimensionality Reduction
- Unsupervised Learning Techniques

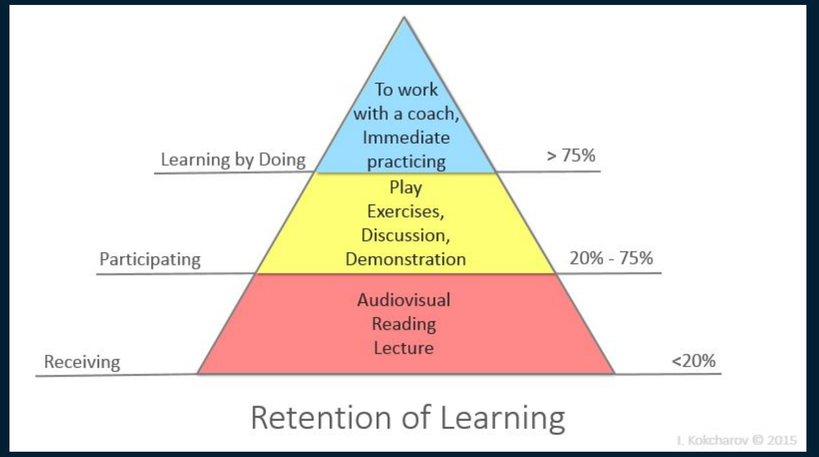
Tools of use

- Python
- Datasets
- Numpy
- Pandas
- Matplotlib
- Scikit-Learn
- Keras
- Tensorflow
- Anaconda
- Weka*

What style to learn

- **Project Base Learning** and **Problem Based Learning** (P2BL)
- Active Learning (AL)





How to Learn

- Lectures
- Discussion and suggestion
- Project Based
- Pair Programming
- Recorded video for each chapters
  - Also will available on Youtube Channel and Facebook Page
- Weekly Open Questions

How to Learn

- Learn with me
  - Facebook Page: @thefutureisdata
  - Youtube: @Kholed Langsari
  - Personal Facebook: @Kholed Langsari
  - Twitter: @KholedLangsari

How to grading

- PBL 4’Cs Rubric;
  - Critical Thinking
  - Creativity
  - Collaboration
  - Communication

How to grading - What to do

- Collaboation and active learning,
  - Class inspection as attend the class
  - Weekly open questions
- Oral Examination
- Capstone Project

How to grading

1	การมีส่วนร่วมในการศึกษาเรียนรู้ **Collaboation and active learning**, class inspecting and collaboration, and weekly open questions	**30%**
2	สอบสัมภาษณ์ **Oral Examination**, acquiring deeping understanding	**20%**
3	วางแผน วิเคราะห์ ออกแบบ และสร้างโครงงาน พร้อมกับนำเสนอความคืบหน้าและนำเสนอชิ้นงานขั้นสุดท้าย **Capstone Project**; project initial, analyze, design and implement, and progress and final presentation	**20%**
4	ผลสัมฤทธิ์โครงงาน **Capstone Project Performance**; submittion, completion	**30%**

Grade Level

A	> 95
B+	86 – 95
B	76 – 85.99
C+	66 – 75.99
C	56 – 65.99
D+	46 – 55.99
D	36 – 45.99
F	< 36

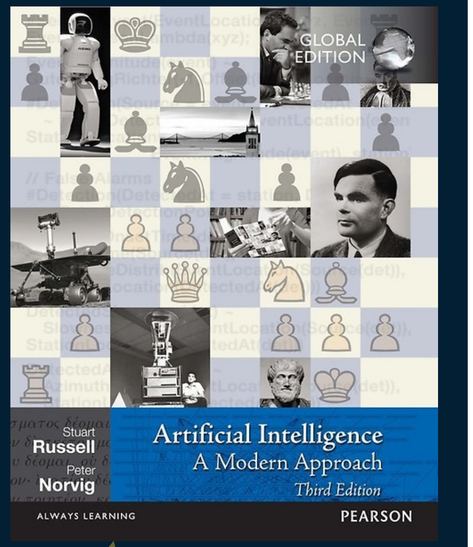
Resources

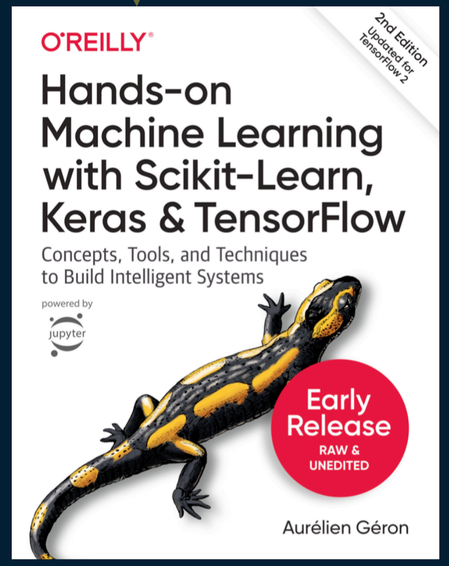
- **Artificial Intelligence:** A Modern Approach
- **Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow:** Concepts, Tools, and Techniques to Build Intelligent Systems 2nd Edition
- **Data Mining** : Practical Machine Learning Tools and Techniques 4th Edition
- **Python Crash Course**, 2nd Edition: A Hands-On, Project-Based Introduction to Programming

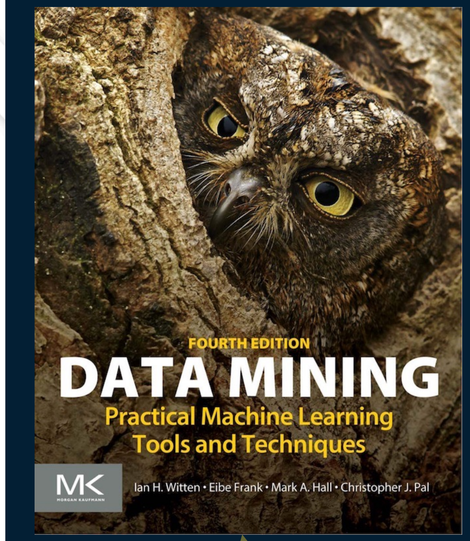
Resources

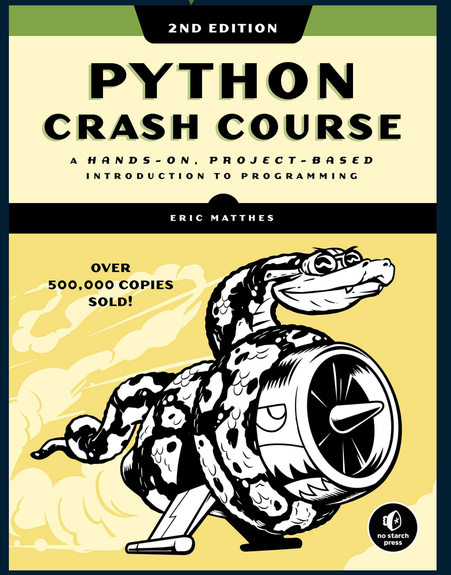
ML using Python

Python









AI Concept

Weka

Class GitHub Repository

https://github.com/langsari/artificial-intelligence-fundamentals-with-python-2021-class

Capstone Project

Capstone Project

Leverage what you've learned throughout the program to build open-ended Machine Learning project.

What to do

- Define and research the problem you want to solve
- Identify and explore the data
- Perform your analyses
- Design solution
- Develop a set of conclusions.
- Present the analysis and your conclusions
- Submit to the given GitHub repository

How to do

- Project progresses and final presentation
- Group helping, group alive but judge in group and individual
- Discussion and suggestion
- Pair work, implement Pair Programming
- Responsible for a project
- Topic choose deciding by interesting

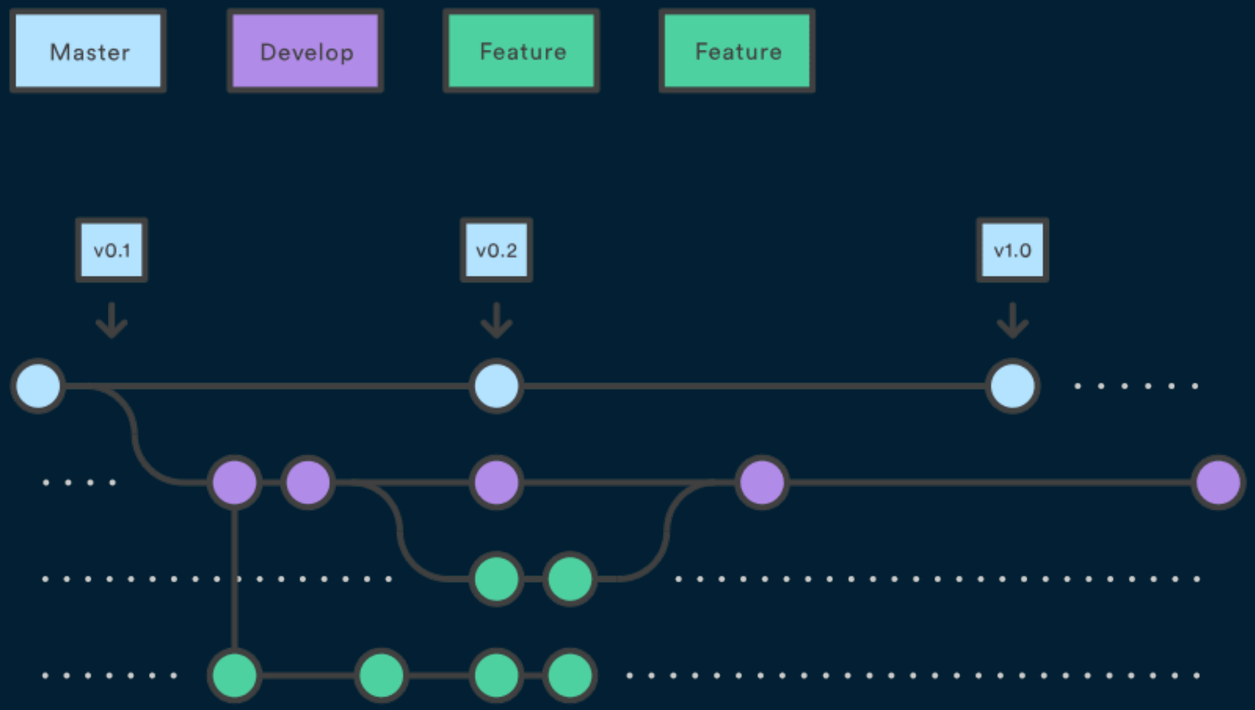
How to work collaboratively

- Working through **Git** and **GitHub**
- Create new repository **branch**
- **Commit, Push**, **Pull** the work
- Push code to **responsible part, branch or module** only
- Use **Pull Request** if want to make change globally, example as edit composer.json, changing database connection and etc
- Discuss an issue and practical through **GitHub Issues**

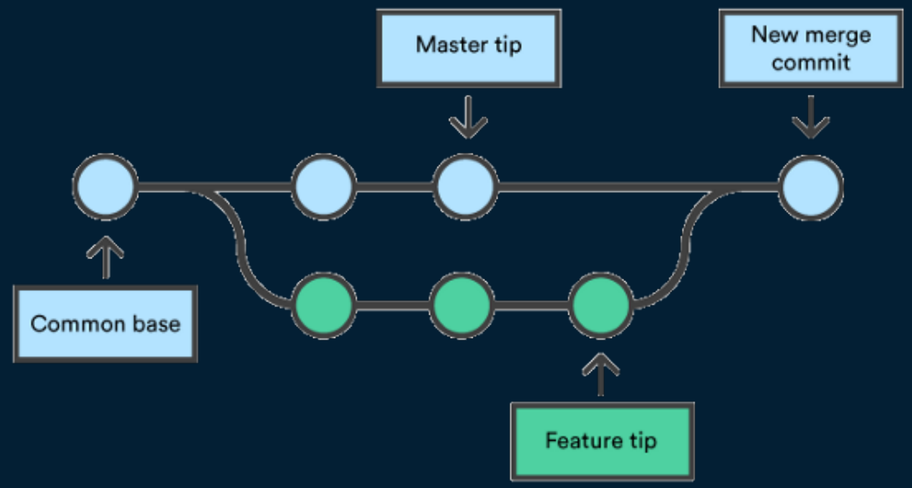
Project GitHub Repository

https://github.com/langsari/-artificial-intelligence-fundamentals-with-python-2021-projects

Work collaboratively via GitHub



Work collaboratively via GitHub



Capstone Project Topic

- Quran x Artificial Intelligence
- Hadith x Artificial Intelligence

Weekly Open Questions

Reply through @thefutureisdata

LANG
SA
RI

อยากเป็น “**วิศวกร AI**” ต้องเรียนรู้อะไรบ้าง?

What should I learn to become an **AI engineer**?

Artificial Intelligence

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