Aimix Manifestos (Our Guiding Principles)

- Explain like I am 10
- Simple > complex
- Jupyter notebook > Powerpoint
- Drawings > words
- Clear code > efficient code
- No shame in asking the same question a billion times
- No stupid questions
- Impactful solution > fancy AI
- Understanding > length of lecture time
- Syntax is everything
- Multiple contributors > one contributor

Aimix Syllabus

Part 1

Bits of python

- Pandas data structure
- Numpy
- A brief tour of Jupyter notebook hidden gems
- Object-Oriented Programming
- A Gentle Introduction to Deep Learning Frameworks
    - Pytorch and Tensorflow

Mathematics of DL for everyone with Live Demo in Jupyter Notebook

- Deep Learning on a Page
- Introduction to vectors, Matrices, and Tensors from ML perspective
- Introduction to Vector calculus from ML perspective
- The Rosenblatt Perceptron
    - A Walkthrough of the Perceptron Algorithm
    - Python Implementation of the Perceptron Algorithm
- Common Activation Functions and their Derivatives for the mortals

- How does a machine learn?
    - Forward and Backward Propagation
    - A Deep Dive into Backpropagation using Simple Additions and Subtractions
    - The Nature of the Error Functions
    - Gradient Descent
- How Do Linear and Logistics Regressions Work?
    - Python implementation of key concepts from scratch

Part 2

The building blocks of Neural Network with Live Demo in Jupyter Notebook

- Fundamentals of Machine Learning with Live Demo in Jupyter Notebook
    - Defining Generalization
    - Tour of various approaches to improve Generalization
    - ML Model Evaluation
- Overview of other machine learning algorithms

Part 3

Live Demos: Shallow and Deep Neural Network

- Fully Connected Network Applied to Multi-class Regression
- Fully Connected Network Applied to Multi-class Classification
    - Training and Inference

Part 4

Convolutional Neural Network Applied to Image Classification

- Fundamentals of Convolutional Neural Network
    - Live Demo: The Convolution operations for the mortal
    - Live Demo: The Max-Pooling Operation for the mortal
- Applications
    - Convolutional neural Network Applied to Image Classification
    - An Image Segmentation Example

- CNN Architectural Patterns

Part 5

Live Demos: Deeper CNNs and Pretrained Models

- VGGNet
- GoogLeNet
- ResNet
- BERT

Part 6

Best Practices from Deloitte

Time series forecast

- Clients Project to Showcase above concepts
- Ethical AI and Data Ethics
- Trustworthy AI
- ReadyAI
- CortexAI
- Age of With
- Deloitte Center for AI Computing