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| **Class** | **Week/Date** | **Content** | **Presenter**  **(2~3)** | **Comments** |
| Ice Breaking | 1st Wk  03/07/2023 | * Course Overview * S/W Install & choose presenters * Homework(Install) |  | All codes will be practiced by each person |
| 2  Python Preliminaries | 2nd Wk  03/14/2023 | Part 1.1: Course Overview  Part 1.2: Introduction to Python  Part 1.3: Python Lists, Dictionaries, Sets & JSON  Part 1.4: File Handling  Part 1.5: Functions, Lambdas, and Map/Reduce |  | Presentation with hands-on practice |
| 3  Python for Machine Learning | 3rd Wk  03/21/2023 | Part 2.1: Introduction to Pandas for Deep Learning  Part 2.2: Encoding Categorical Values in Pandas  Part 2.3: Grouping, Sorting, and Shuffling  Part 2.4: Using Apply and Map in Pandas  Part 2.5: Feature Engineering in Padas |  |  |
| 4  TensorFlow and Keras for Neural Networks | 4th Wk  03/28/2023 | Part 3.1: Deep Learning and Neural Network Introduction  Part 3.2: Introduction to Tensorflow & Keras  Part 3.3: Saving and Loading a Keras Neural Network  Part 3.4: Early Stopping in Keras to Prevent Overfitting  Part 3.5: Extracting Keras Weights and Manual Neural Network Calculation |  |  |
| 5  Training for Tabular Data | 5th Wk  04/04/2023 | Part 4.1: Encoding a Feature Vector for Keras Deep Learning  Part 4.2: Keras Multiclass Classification for Deep Neural Networks with ROC and AUC  Part 4.3: Keras Regression for Deep Neural Networks with RMSE  Part 4.4: Backpropagation, Nesterov Momentum, and ADAM Training  Part 4.5: Neural Network RMSE and Log Loss Error Calculation from Scratch |  |  |
| 6  Regularization and Dropout | 6th Wk  04/11/2023 | Part 5.1: Introduction to Regularization  Part 5.2: Using K-Fold Cross Validation with Keras  Part 5.3: Using L1 and L2 Regularization with Keras to Decrease Overfitting  Part 5.4: Drop Out for Keras to Decrease Overfitting  Part 5.5: Bootstrapping and Benchmarking Hyperparameters |  |  |
| 7  CNN for Vision | 7th Wk  04/18/2023 | Part 6.1: Image Processing in Python  Part 6.2: Using Convolutional Networks with Keras  Part 6.3: Using Pretrained Neural Networks  Part 6.4: Looking at Keras Generators and Image Augmentation  Part 6.5: Recognizing Multiple Images with YOLOv5 |  |  |
| 8  Generative Adversarial Networks (GANs) | 8th Wk  04/25/2023 | Part 7.1: Introduction to GANS for Image and Data Generation  Part 7.2: Train StyleGAN3 with your Own Images  Part 7.3: Exploring the StyleGAN Latent Vector  Part 7.4: GANS to Enhance Old Photographs Deoldify  Part 7.5: GANs for Tabular Synthetic Data Generation |  |  |
| 9  Kaggle | 9th Wk  05/02/2023 | Part 8.1: Introduction to Kaggle  Part 8.2: Building Ensembles with Scikit-Learn and Keras  Part 8.3: How Should you Architect Your Keras Neural Network: Hyperparameters  Part 8.4: Bayesian Hyperparameter Optimization for Keras |  |  |
| 10  Transfer Learning | 10th Wk  05/09/2023 | Part 9.1: Introduction to Keras Transfer Learning  Part 9.2: Keras Transfer Learning for Computer Vision  Part 9.3: Transfer Learning for NLP with Keras  Part 9.4: Transfer Learning for Facial Feature Recognition  Part 9.5: Transfer Learning for Style Transfer |  |  |
| 11  Time Series in Keras | 11th Wk  05/16/2023 | Part 10.1: Time Series Data Encoding for Deep Learning, Keras  Part 10.2: Programming LSTM with Keras and  Part 10.3: Text Generation with Keras  Part 10.4: Introduction to Transformers  Part 10.5: Transform ers for Timeseries |  |  |
| 12  Natural Language Processing | 12th Wk  05/23/2023 | Part 11.1: Hugging Face Introduction  Part 11.2: Hugging Face Tokenizers  Part 11.3: Hugging Face Data Sets  Part 11.4: Training a Model in Hugging Face  Part 11.5: What are Embedding Layers in Keras |  |  |
| 13  Reinforcement Learning | 13th Wk  05/30/2023 | Part 12.1: Introduction to the OpenAI Gym  Part 12.2: Introduction to Q-Learning for Keras  Part 12.3: Keras Q-Learning in the OpenAI Gym  Part 12.4: Atari Games with Keras Neural Networks  Part 12.5: Application of Reinforcement Learning |  |  |
| 14 - 15  Final Project | 14th Wk  06/13  15th Wk  06/20 | Final Project : Implementing GAN & DCGAN with English Alphabets in Tensorflow w/Tensorboard |  | 06/06/2023 : Memorial Day |