3. Demonstrate your understanding of the material through a final project uploaded to GitHub.

Syllabus

This syllabus presents the expected class schedule, due dates, and reading assignments. Download current syllabus.

Module	Content
Module 1 **Meet Online on 01/25/2021**	**Module 1: Python Preliminaries** • 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/ReducePython Preliminaries • **We will meet online this week!** (first online meeting)
Module 2 Week of 02/01/2021	**Module 2: Python for Machine Learning** • 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 • Module 1 Program due: 02/02/2021 • Icebreaker due: 02/02/2021
Module 3 Week of 02/08/2021	**Module 3: TensorFlow and Keras for Neural Networks** • 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 • Module 2: Program due: 02/09/2021

Module	Content
Module 4 Week of 02/15/2021	**Module 4: Training for Tabular Data** • 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 • Module 3 Program due: 02/16/2021
Module 5 **Meet Online on 02/22/2021**	**Module 5: Regularization and Dropout** • Part 5.1: Introduction to Regularization: Ridge and Lasso • 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 • Module 4 Program due: 02/23/2021 • **We will meet online this week!** (2nd Online Meeting)
Module 6 Week of 03/01/2021	**Module 6: CNN for Vision** Part 6.1: Image Processing in Python • Part 6.2: Keras Neural Networks for MINST and Fashion MINST • Part 6.3: Implementing a ResNet in Keras • Part 6.4: Computer Vision with OpenCV • Part 6.5: Recognizing Multiple Images with Darknet • Module 5 Program due: 03/02/2021

Module	Content
Module 7 Week of 03/08/2021	**Module 7: Generative Adversarial Networks (GANs)** • Part 7.1: Introduction to GANS for Image and Data Generation • Part 7.2: Implementing a GAN in Keras • Part 7.3: Face Generation with StyleGAN and Python • Part 7.4: GANS for Semi-Supervised Learning in Keras • Part 7.5: An Overview of GAN Research • Module 6 Assignment due: 03/09/2021
Module 8 **Meet Online on 03/15/2021**	**Module 8: Kaggle** • 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 • Part 8.5: Current Semester's Kaggle • Module 7 Assignment due: 03/16/2021 • **We will meet online this week!** (3rd Meeting)
Module 9 Week of 03/22/2021	**Module 9: Transfer Learning** • Part 9.1: Introduction to Keras Transfer Learning • Part 9.2: Popular Pretrained Neural Networks for Keras. • Part 9.3: Transfer Learning for Computer Vision and Keras • Part 9.4: Transfer Learning for Languages and Keras • Part 9.5: Transfer Learning for Keras Feature Engineering • Module 8 Assignment due: 03/23/2021

Module	Content
Module 10 Week of 03/29/2021	**Module 10: Time Series in Keras** • Part 10.1: Time Series Data Encoding for Deep Learning, TensorFlow and Keras • Part 10.2: Programming LSTM with Keras and TensorFlow • Part 10.3: Image Captioning with Keras and TensorFlow • Part 10.4: Temporal CNN in Keras and TensorFlow • Part 10.5: Temporal CNN in Keras and TensorFlow • Module 9 Assignment due: 03/30/2021
Module 11 Week of 04/05/2021	**Module 11: Natural Language Processing** • Part 11.1: Getting Started with Spacy in Python • Part 11.2: Word2Vec and Text Classification • Part 11.3: Natural Language Processing with Spacy and Keras • Part 11.4: What are Embedding Layers in Keras • Part 11.5: Learning English from Scratch with Keras and TensorFlow • Module 10 Assignment due: 04/06/2021
Module 12 Week of 04/19/2021	**Module 12: Reinforcement Learning** • Kaggle Assignment due: 04/19/2021 (approx 4-6PM, due to Kaggle GMT timezone) • 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: How Alpha Zero used Reinforcement Learning to Master Chess

Module	Content
Module 13 **Meet Online on 04/26/2010**	**Module 13: Deployment and Monitoring** • Part 13.1: Flask and Deep Learning Web Services • Part 13.2: Deploying a Model to AWS • Part 13.3: Using a Keras Deep Neural Network with a Web Application • Part 13.4: When to Retrain Your Neural Network • Part 13.5: AI at the Edge: Using Keras on a Mobile Device • **We will meet online this week!** (4th Meeting)
Module 14 Week of 05/03/2021	**Module 14: Other Neural Network Techniques** • Part 14.1: What is AutoML • Part 14.2: Using Denoising AutoEncoders in Keras • Part 14.3: Training an Intrusion Detection System with KDD99 • Part 14.4: Anomaly Detection in Keras • Part 14.5: New Technology in Deep Learning • Final Project due 05/11/2021

Datasets

- Datasets can be downloaded here

Releases 8

Fall 2020 semester Latest
on Dec 29, 2020

+ 7 releases

Packages

No packages published

Contributors 22