The 2020 MCUT-UNDIKSHA Artificial Intelligence Online Workshop

No.	Date	Topic	Course outline	Course Instructors
1.	8/11	AI lecture for overview (I)	1. Course Introduction 2. What is AI? 3. History of AI. 4. Applications of AI. 5. Categorization of AI.	**Jiun-Wei Liou**
2.	8/13	AI lecture for overview (II)	1. Introduction of data science. 2. Introduction of (basic) machine learning. 3. Introduction of deep learning. 4. Future thoughts of AI.	
3.	8/18		Assignment and Tutorial	**I Made Gede Sunarya**
4.	8/20	Machine Learning Essential – R/Python Hands-on and Theoretical Background	1. Business Problems and Data Mining/Machine Learning Tasks Set 2. Dimensionality Reduction and Principal Component Analysis 3. Clustering Analysis	**Ching-Shih Tsou**
5.	8/25	Machine Learning Essential – R/Python Hands-on and Theoretical Background	4. Association Rule Mining 5. k Nearest Neighbors 6. Tree-Based Models (Classification Trees, Regression Trees, and Model Trees incl.)	
6.	8/27		Assignment and Tutorial	**I Made Gede Sunarya**
7.	9/1	Machine Learning Essential – R/Python Hands-on and Theoretical Background	7. Naïve Bayes Classification (text processing incl.) 8. Support Vector Machines 9. Bagging and Boosting	**Ching-Shih Tsou**
8.	9/3		Assignment and Tutorial	**I Made Gede Sunarya**
9.	9/8	AI in Smart Grid (I)	1. Introduction to AI 2. Machine Learning vs. Deep Learning 3. Supervised learning 4. Perceptron	**Yu-Hsiu Lin**
10.	9/10	AI in Smart Grid (II)	1. Multi-layer perceptron (MLP)	

No.	Date	Topic	Course outline	Course Instructors
			2. MLP applied on iris data for iris flower classification 3. A case study: AI in load management	
11.	9/15		Assignment and Tutorial	**I Made Gede Sunarya**
12.	9/17	Image recognition- Introduction to Computer Vision	1. Low-level vision: image processing, edge detection, feature detection, cameras, image formation 2. Geometry and algorithms: projective geometry, stereo, structure from motion, optimization 3. Recognition: face detection / recognition, category recognition, segmentation	**Meng-Jey Youh**
13.	9/22	AI-based Face recognition - Image Transformations	1. Dowload code from Github 2. Affine Transformation 3. Homograohy & Perspective Transformation 4. Face Recognition	**Chuang-Jan Chang**
14.	9/24	AI-based Face recognition- OpenCV Basics - 2	1. DrawOver Image 2. Mouse Handling 3. Read， Write Over Image & Display	
15.	9/29		Assignment and Tutorial	**I Made Gede Sunarya**
16.	**9/30 (Wed)**	Image recognition- Convolutional Neural Networks, CNN	1. History and definition of CNN: Neocognitron (a self-organizing neural network model for a mechanism of pattern recognition). 2. Algorithm architecture: convolutional layer, pooling layer, Relu layer, fully connected layer, loss layer 3. Applications: image recognition, video analysis, natural language processing, time series forecasting, etc. 4. Convolutional neural networks for visual recognition.	**Meng-Jey Youh**
17.	10/6	Image recognition- Region-based CNN, R-CNN	1. Definition of R-CNN 2. Extended algorithm: fast R-CNN, masked R-CNN, Mesh R-CNN, YOLO 3. Application of region-based convolutional neural network	
18.	10/8		Group Presentation and Course Feedback	UNDIKSHA & MCUT

Course time: 18:30~ 21:30 (Bali time), **Tuesdays & Thursdays**