ELE 680 Lecture plan 2023

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| **Week** | **Topic** | **Length (min)** | **Info** |
|  |  |  |  |
| 34  Start up  21 Aug. | DNN intro: Neurons, layers, back propagation, optimizers, loss functions, Multilayer Perceptron Network (MPN) | 50 | Video lecture + physical lecture  **Thursday 24.08 - 08.15-10.00 Room KE D-123** |
| Convolutional Neural Network (CNN) | 50 | Video lecture + physical lecture  **Thursday 24.08 – 08.15-10.00 Room KE D-123** |
| Training a DNN – | 33 + 48 | Video lecture |
| Hyperparameter tuning and practical understanding of results  Training set, evaluation set, test set, learning rate, epochs, learning rate decay, early stopping, dropout, regularization, bias, variance | 36 | Video lecture |
| 35 | Recurrent neural networks: - GRU, LSTM | 43 + 15 | Video lecture |
| Time Series Analysis | 39 | Video Lecture |
|  |  | First assignment – Jupyter notebook – Airline Passenger Satisfaction Prediction -  Wednesday 30 August |
| Unsupervised and supervised learning, Transfer learning | 50 | Video lecture + physical lecture  **Thursday 31.08 – 08.15-10.00 Room KE D-123** |
| Strong and weak labels | 25 | Video lecture + physical lecture  **Thursday 31.08 – 08.15-10.00 Room KE D-123** |
| Assignment lab |  | **KE D-123 01.09 – Friday – 08.15-10.00** |
| 36 |  |  | Second assignment – jupyter notebook – Animal Classification -  Wednesday 6 September |
| Image classification and Object Detection – images   * One-stage vs two-stage detectors | 19 | Video lecture + physical lecture  **Thursday 07.09 – 08.15-10.00 Room KE D-123** |
| Activity Recognition – video,   * 3D CNN, CNN+LSTM | 25 | Video lecture + physical lecture  **Thursday 07.09 – 08.15-10.00 Room KE D-123** |
| Autoencoders and GANs | 40 | Video lecture + physical lecture  **Thursday 07.09 – 08.15-10.00 Room KE D-123** |
| Assignment lab |  | **KE D-123 08.09 – Friday – 08.15-10.00** |
|  |  | Sunday 10 September. Submission first assignment |
| 37 | Deep learning in image reconstruction and medical imaging. | 18 +14 +30 | Video Lecture |
| Deep Learning for Text and Natural language Understanding (NLU), Attention mechanism in RNNs | 42 + 18 + 54 | Video Lecture |
| Neural Information Retrieval | 13 | Video Lecture |
| Assignment lab |  | [**KE D-123**](https://cloud.timeedit.net/uis/web/student_u/objects/16704.html?l=nb_NO&types=4&sid=47&fr=t)  **14.09 – Thursday – 08.15-10.00** |
| Final project related info:  information on unix account and GPU connection |  | [**KE D-123**](https://cloud.timeedit.net/uis/web/student_u/objects/16704.html?l=nb_NO&types=4&sid=47&fr=t)  **15.09 – Friday – 08.15-10.00** |
| 38 | Deep Reinforcement Learning | 113 | Video Lecture |
|  |  | Monday 18 September Submission second assignment |
| DNN project introduction and start up. GPUs reserved from 22.09-13.10.  Groups of 2 students. The project is like a “home-exam” without supervision. |  | Thursday 21 September |
| 39 | Project lab – GPU access etc |  | **Thursday 28 September**  **Room KE D-123 (8.15-10.00)** |
| Project lab – GPU access etc |  | **Friday 29 September**  **Room KE D-123 (8.15-10.00)** |
| 40 |  |  |  |
| 41 |  |  | **Submission DNN project – Friday 13 October** |
| 42 | Oral presentation of DDN group projects |  | **Thursday 19 October**  **Room KE D-123 (8.15-10.00)**  **Some groups might need to present on Friday 20 October as well.** |