SC2 - Deep Learning in the Environmental Sciences
Short-Course (16 - 17 August, 2019)

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Friday 16 August

Time	Description	Duration
9:00 - 10:00 am	**Introduction: Perspective, Background, Model Optimization**	1h
10:00 - 10:15 am	*Health break*	15 min
10:15 - 10:45 am	**The DL community: Overview of software tools, coding libraries, databases**	30 min
10:45 - 11:00 pm	Practical - Installation of software packages and libraries (R/R Studio and Anaconda Python)	15 min
11:00 - 12:30 pm	**Image Analysis: Convolutional neural networks (CNN)**	1.5h
12:30 - 1:30 pm	*Lunch*	1h
1:30 - 2:30 pm	Practical examples - Classification of images (CNN): fruit and landcover/landuse satellite remote-sensing imagery	1h
2:30 - 3:30pm	**Environmental time series/regression: Recursive neural networks (RNN), Long-Short Term Memory (LSTM), Deep belief networks (DBN), Reinforcement Q-learning (DQN)**	1 h
3:30 - 3:45 pm	*Health Break*	15 min
3:45 - 4:30 pm	Practical examples - RNN, DBN, DQN, pretraining, wine-quality, crop yield prediction	45 min

Saturday 17 August

Time	Description	Duration
9:00 - 10:30 am	Practical examples - Time-series anomaly detection.and 1D CNN in biological sequence analysis.	1.5h
10:30 - 10:45 am	*Health break*	15 min
10:45 -12:30 am	***Evaluating models (sensitivity and validation):Bias-variance tradeoff, performance metrics, hyperparameter search***	1h 45min