Embedded Machine Learning Course Reading Links

# Week 1 Intro to Machine Learning

<https://digileaders.com/future-ai-bias-amplification-algorithmic-determinism/>

<https://onix-systems.com/blog/what-do-you-need-to-know-about-the-limits-of-machine-learning>

<https://towardsdatascience.com/the-limitations-of-machine-learning-a00e0c3040c6>

<https://blog.keras.io/the-limitations-of-deep-learning.html>

# Week 1 Machine Learning on Microcontrollers

<https://www.plugandplaytechcenter.com/resources/tinyml-making-smart-devices-tinier-ever/>

<https://www.edgeimpulse.com/blog/dsp-key-embedded-ml>

<https://semiengineering.com/what-makes-a-good-accelerator/>

<https://towardsdatascience.com/how-to-make-your-own-deep-learning-accelerator-chip-1ff69b78ece4>

<https://www.sigarch.org/dnn-accelerator-architecture-simd-or-systolic/>

# Week 1 Edge Impulse CLI Installation Troubleshooting

<https://docs.edgeimpulse.com/docs/cli-installation>

# Week 1 What Makes a Good Dataset?

<https://towardsdatascience.com/train-validation-and-test-sets-72cb40cba9e7>

<https://medium.com/analytics-vidhya/what-is-balance-and-imbalance-dataset-89e8d7f46bc5>

<https://towardsdatascience.com/how-to-build-a-data-set-for-your-machine-learning-project-5b3b871881ac>

<https://machinelearningmastery.com/impact-of-dataset-size-on-deep-learning-model-skill-and-performance-estimates/>

<https://cloud.google.com/automl-tables/docs/data-best-practices>

<https://docs.edgeimpulse.com/docs/continuous-gestures>

<https://medium.com/towards-artificial-intelligence/best-datasets-for-machine-learning-data-science-computer-vision-nlp-ai-c9541058cf4f>

# Week 1 Feature Extraction and Selection

<https://medium.com/@mehulved1503/feature-selection-and-feature-extraction-in-machine-learning-an-overview-57891c595e96>

<https://quantdare.com/what-is-the-difference-between-feature-extraction-and-feature-selection/>

<https://www.youtube.com/watch?v=TDgTYsgz4UI>

<https://www.youtube.com/watch?v=spUNpyF58BY>

<https://blog.endaq.com/why-the-power-spectral-density-psd-is-the-gold-standard-of-vibration-analysis>

# Week 2 Neural Networks and Training

<https://www.youtube.com/watch?v=aircAruvnKk>

<https://www.youtube.com/watch?v=d14TUNcbn1k>

<https://victorzhou.com/blog/intro-to-neural-networks/>

<http://neuralnetworksanddeeplearning.com/chap1.html>

<https://machinelearningmastery.com/rectified-linear-activation-function-for-deep-learning-neural-networks/>

<https://victorzhou.com/blog/softmax/>

# Week 2 Evaluation, Underfitting, and Overfitting

<https://towardsdatascience.com/understanding-confusion-matrix-a9ad42dcfd62>

<https://www.analyticsvidhya.com/blog/2020/04/confusion-matrix-machine-learning/>

<https://towardsdatascience.com/beyond-accuracy-precision-and-recall-3da06bea9f6c>

<https://stats.stackexchange.com/questions/91044/how-to-calculate-precision-and-recall-in-a-3-x-3-confusion-matrix>

<https://missinglink.ai/guides/neural-network-concepts/neural-network-bias-bias-neuron-overfitting-underfitting/>

<https://www.youtube.com/watch?v=EQWr3GGCdzw>

<https://www.cs.toronto.edu/~hinton/absps/JMLRdropout.pdf>

# Week 2 Using a Model for Inference

<https://docs.edgeimpulse.com/docs/using-your-mobile-phone>

<https://docs.edgeimpulse.com/docs/through-webassembly>

<https://docs.edgeimpulse.com/docs/through-webassembly-browser>

<https://www.edgeimpulse.com/blog/introducing-eon>

<https://docs.edgeimpulse.com/docs/continuous-motion-recognition>

# Week 2 Anomaly Detection

<https://towardsdatascience.com/anomaly-detection-for-dummies-15f148e559c1>

<https://www.bmc.com/blogs/machine-learning-anomaly-detection/>

<https://medium.com/swlh/introduction-to-anomaly-detection-in-time-series-data-and-k-means-clustering-5832fb33d8cb>

<https://stanford.edu/~cpiech/cs221/handouts/kmeans.html>

# Week 2 Project Motion Detection

<https://store.arduino.cc/usa/nano-33-ble-sense>

<https://docs.edgeimpulse.com/docs/arduino-nano-33-ble-sense>

<https://cdn.edgeimpulse.com/firmware/arduino-nano-33-ble-sense.zip>

<https://docs.edgeimpulse.com/docs/arduino-nano-33-ble-sense#2-update-the-firmware>

# Week 3 Sample Rate and Bit Depth

<https://www.youtube.com/watch?v=048tBZMt3eY>

<https://www.youtube.com/watch?v=fZzMXdxbOes>

<https://www.izotope.com/en/learn/digital-audio-basics-sample-rate-and-bit-depth.html>

<https://nanonets.com/blog/data-augmentation-how-to-use-deep-learning-when-you-have-limited-data-part-2/>

<https://www.edgeimpulse.com/blog/make-the-most-of-limited-datasets-using-audio-data-augmentation>

# Week 3 MFCCs and CNNs

<https://www.youtube.com/watch?v=spUNpyF58BY>

<https://www.allaboutcircuits.com/technical-articles/nyquist-shannon-theorem-understanding-sampled-systems/>

<https://lspo.feri.um.si/CoLoS/applets/aliasing/index.html>

<http://practicalcryptography.com/miscellaneous/machine-learning/guide-mel-frequency-cepstral-coefficients-mfccs/>

<https://haythamfayek.com/2016/04/21/speech-processing-for-machine-learning.html>

<https://towardsdatascience.com/a-comprehensive-guide-to-convolutional-neural-networks-the-eli5-way-3bd2b1164a53>

<https://www.superdatascience.com/blogs/convolutional-neural-networks-cnn-step-1b-relu-layer/>

<https://arxiv.org/ftp/arxiv/papers/1905/1905.03554.pdf>

<https://machinelearningmastery.com/dropout-for-regularizing-deep-neural-networks/>

<https://machinelearningmastery.com/learning-rate-for-deep-learning-neural-networks/>

# Week 3 Implementation Strategies and Sensor Fusion

<https://en.wikipedia.org/wiki/Moving_average>

<https://towardsdatascience.com/sensor-fusion-90135614fde6>