AI84/AI85 Task List

7/3/2019

Constraint: For all host side code, use Python 3.6.5 or newer and PyTorch 1.1.0 or newer.

# 1. MLP Example Applications

What applications/networks do MLPs excel at? Where are MLPs better than CNNs?

* See separate notes

# 2. Speech Processing (Keyword Spotting)

* Python code capturing audio working; generating spectrogram; using Google training data
* Model accuracy currently low, retraining with data augmentation, limiting to 5 keywords
* Todo: Deployment

# 3. Additional Operators

What additional operators are absolutely required? We have (MaxPool|AvgPool)Conv2D(ReLU) in AI84 with 3x3 kernels. A concatenation can be implemented with current hardware as well (pending verification). We are discussing the addition of 1x1 kernels, 1D convolutions, ~~and Linear operators~~. We are investigating Elementwise Addition.

# 2.1 1D Convolution Example Applications

Find example applications and sample networks that use 1D convolutions. What architecture support does 1D convolution require? For example, does the 1D convolution need padding? Is the data presented as an endless stream or as “chunks” of data – for example 1x200?

# 2.2 Batch Norm and Quantization

Is Batch Normalization useful when quantizing to 8 bits?

# 3. Develop Training Material / Collateral / GUI / Tools

To be discussed.

# 4. “Stress-Test”

Develop options to stress-test/characterize AI solutions. What options are there for verification methodologies? How to you evolve the network if a customer presents a failed input?