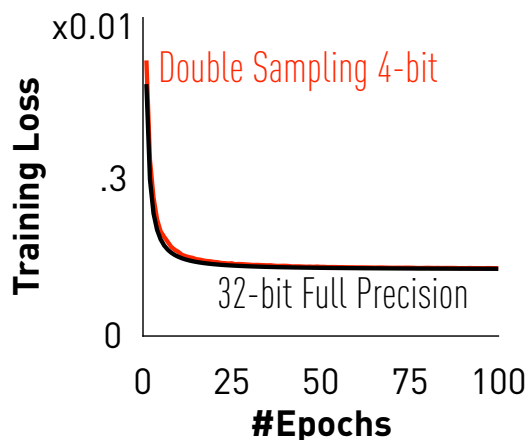
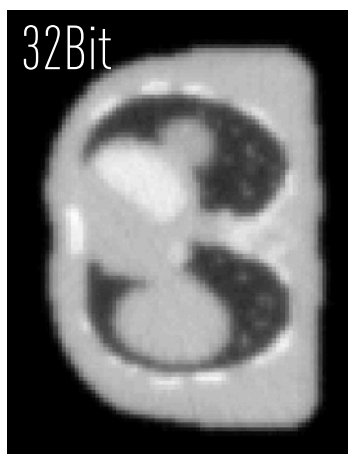


Machine Learning Models	Data Movement Channels			Speed up because of our techniques
	Gradient	Input Samples	Model	
Linear Models	[1,2]	1. Double Sampling 2. Data-Optimal Encoding	Stochastic Rounding	Very Significant Speed up (Up to 10x)
Generalized Linear Models		1. Chebyshev Approximation 2. Data Sketching Heuristics for SVM		Minor/No Speed up
Deep Learning		[3,4,5]	Data-Optimal Encoding	Significant Speed up

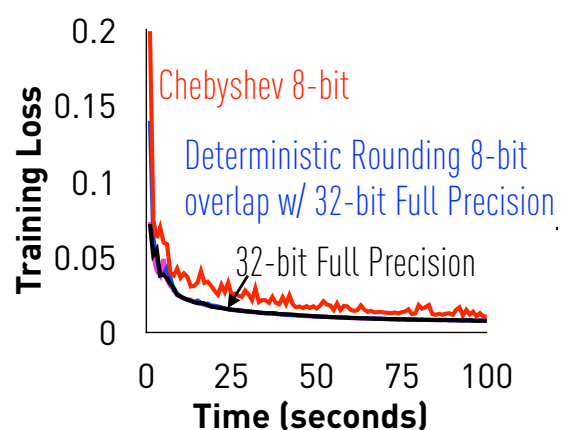
(a) Linear Regression



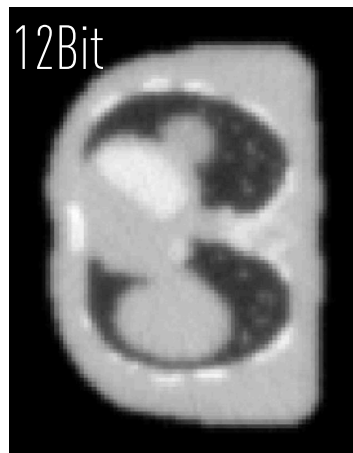
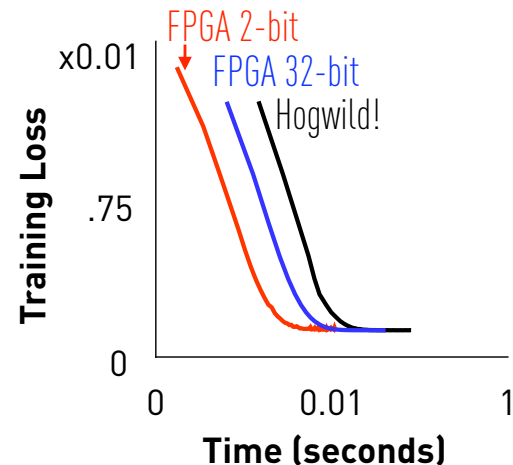
(c) 3D Reconstruction



(d) Non-linear Models



(b) FPGA Speed Up



(d) Deep Learning

