Research ideas
AI, ML, …

Ideas often get stuck in the prototyping stage, as the complex and ad-hoc software/hardware co-design process is a barrier to productization

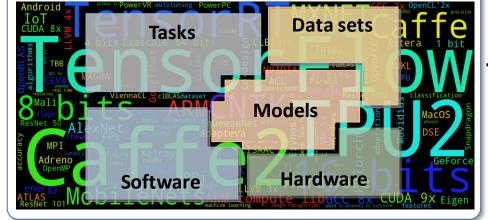**The Collective Knowledge approach:** decompose the complex process into portable, customizable and reusable workflows & components

Production use across diverse devices
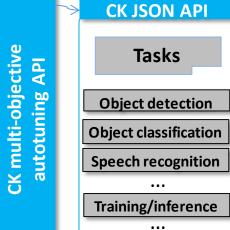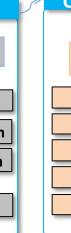*(edge, IoT, mobile, cloud, supercomputers)*

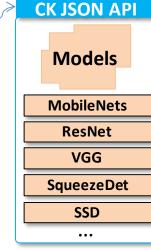**while trading off multiple constraints**
(speed, accuracy, energy, size, costs …)

Industry adopts best or novel reproducible workflows presented at associated conferences

CK multi-objective autotuning API

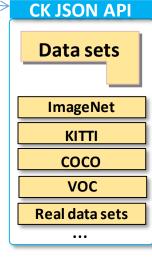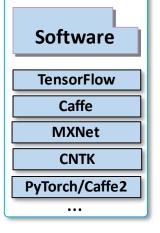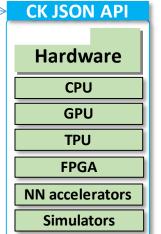| CK JSON API	CK JSON API	CK JSON API	CK JSON API	CK JSON API
Tasks	**Models**	**Data sets**	**Software**	**Hardware**
Object detection	MobileNets	ImageNet	TensorFlow	CPU
Object classification	ResNet	KITTI	Caffe	GPU
Speech recognition	VGG	COCO	MXNet	TPU
…	SqueezeDet	VOC	CNTK	FPGA
Training/inference	SSD	Real data sets	PyTorch/Caffe2	NN accelerators
…	…	…	…	Simulators
				…

A live scoreboard allows to browse, compare and reproduce exploration results under different co-design categories

cKnowledge.org/repo

Invite the ML/systems community to share components and search for Pareto-optimal solutions