Name	understandable	coarse concept	experiment datasets	code available
Deep variational BF	very hard	gradient passes through latent states; transition paraneter β summarizes current and long term input and is used for the latent transitions	toy examples (pendulum, bouncing balls)	according to website "soon" (`https://argmax.ai/blog/dvbfintro/`)
Backprop KF	mediocre	latent variable Φ makes filter differentiable $->$ end-to-end BPTT; motion model simple CNN; motion model not there (no real prediction step, transitions are implicit?)	img tracking task (toyish) and KITTI (visual odometry)	no
LSTM KF	easy	estimate each step the KF paramters: transition function f and its jacobian, the transition noise Q and the measurement noise R with LSTM's; feed these into a standard KF $->$ optimizable via end-to-end BPTT	Human3.6M (pose estimation), Cambridge Landmarks/7scenes (camera tracking), MIT RGB-D Object Pose Tracking Dataset	yes (`https://github.com/Seleucia/lstmkf_ICCV2017/blob/master/train_h36m.py`)
End-to-End HF	easy	RNN for measurement and motion model and then supervised (or unsupervised) end-to-end(or individual) BPTT (simplifications about these models (e.g. convolution for motion model)	toy tasks (simplified localization of robot)	no
Differentiable PF	mediocre	like HF but with particles; but particles in themselve are not differentiable in resampling (only supervised in each single step)	DeepMind Lab (global localization, modified), KITTI (visual odometry)	yes, py+tf (`https://github.com/tu-rbo/differentiable-particle-`