A. Appendix.

Table 2 shows the 37 selected models with the criteria: $\{(F1_{cl_0} \wedge F1_{cl_1}) > 0.9 \wedge (H(\mathbb{P}) < 0.1)\}$. We identify the studies by the sensor input and some variation in sequence structure. We then list their Uncertainty Quantification method, performance by predictive entropy, ECE, $F1$ scores for both classes and weighted score, and accuracy. We also list the hyperparameters for the candidates that have been tuned with Bayesian Optimization with Hyperband. We highlight interesting values from the selected studies in bold.

Table 2. Performance and hyperparameters of selected networks with UQ methods of MC Dropout (DO), DropConnect (DC), and Flipout (FO) and with Standard Layers (SL).

ID	Study	UQ	Entropy	ECE	$F1_{cl_0}$	$F1_{cl_1}$	$F1_{weighted}$	Acc	Dropout rate	CNN	LSTM
	CNN										
1	jstate-imu-in1000-step100	DO	0.0739	0.0134	0.9726	0.9110	0.9582	0.9581	0.46	$\{f_1: 22, f_2: 21, k_1: 11, k_2: 16\}$	
2	imu-in1000-step100	SL	0.0374	0.0556	0.9704	0.9095	0.9562	0.9554	0.21	$\{f_1: 26, f_2: 19, k_1: 6, k_2: 7\}$	
3	imu-in400-step100	DO	0.0843	0.0122	0.9787	0.9280	0.9669	0.9672	0.42	$\{f_1: 16, k_1: 7\}$	
4	imu-in400-step100	DO	0.0451	0.0354	0.9801	0.9342	0.9694	0.9695	0.32	$\{f_1: 77, k_1: 11\}$	
5	imu-in400-step100	DO	0.0410	0.0493	0.9704	0.9050	0.9551	0.9548	0.34	$\{f_1: 77, f_2: 22, k_1: 14, k_2: 8\}$	
6	imu-in1000-step100	DO	0.0707	0.0122	0.9742	0.9171	0.9608	0.9606	0.50	$\{f_1: 16, k_1: 16\}$	
7	imu-in1000-step100	DO	0.0381	0.0355	0.9701	0.9120	0.9565	0.9554	0.18	$\{f_1: 16, k_1: 6\}$	
8	imu-in1000-step100	DO	0.0211	0.0621	0.9813	0.9430	0.9724	0.9719	0.11	$\{f_1: 52, k_1: 13\}$	
9	imu-in1000-step100	DO	0.0405	0.0290	0.9678	0.9071	0.9536	0.9522	0.11	$\{f_1: 54, k_1: 9\}$	
10	imu-in1000-step100	DO	0.0693	0.0264	0.9723	0.9177	0.9596	0.9586	0.43	$\{f_1: 63, f_2: 41, k_1: 8, k_2: 7\}$	
11	imu-in1000-step100	DO	0.0433	0.0238	0.9761	0.9255	0.9643	0.9638	0.15	$\{f_1: 47, k_1: 10\}$	
12	imu-in1000-step100	DO	0.0381	0.0291	0.9798	0.9375	0.9699	0.9694	0.23	$\{f_1: 56, f_2: 78, k_1: 7, k_2: 4\}$	
13	imu-in1000-step100	DO	0.0402	0.0127	0.9800	0.9388	0.9704	0.9698	0.09	$\{f_1: 19, k_1: 14\}$	
14	imu-in1000-step100	DO	0.0187	0.0494	0.9840	0.9508	0.9763	0.9759	0.02	$\{f_1: 29, k_1: 11\}$	
15	imu-in1000-step100	DO	0.0323	0.0644	0.9730	0.9181	0.9602	0.9594	0.23	$\{f_1: 51, f_2: 75, f_3: 57, k_1: 11, k_2: 6, k_3: 6\}$	
16	imu-in400-step100	FO	0.0710	0.0256	0.9797	0.9315	0.9685	0.9687	0.40	$\{f_1: 97, k_1: 15\}$	
17	imu-in400-step100	FO	0.0261	0.0515	0.9761	0.9132	0.9614	0.9625	0.01	$\{f_1: 116, k_1: 14\}$	
18	**imu-in400-step100**	**FO**	**0.0096**	**0.0790**	**0.9871**	**0.9550**	**0.9796**	**0.9799**	0.17	$\{f_1: 16, f_2: 63, f_3: 102, k_1: 6, k_2: 5, k_3: 11\}$	
19	imu-in1000-step100	FO	0.0413	0.0296	0.9784	0.9336	0.9679	0.9674	0.10	$\{f_1: 23, k_1: 6\}$	
20	imu-in1000-step100	FO	0.0227	0.0343	0.9843	0.9485	0.9759	0.9759	0.02	$\{f_1: 46, f_2: 36, f_3: 17, k_1: 12, k_2: 14, k_3: 14\}$	
21	imu-in1000-step100	DO	0.0252	0.0369	0.9819	0.9445	0.9731	0.9727	0.17	$\{f_1: 107, f_2: 28, k_1: 12, k_2: 5\}$	
	CNN-LSTM										
22	imu-in400-step100	DO	0.0629	0.0235	0.9775	0.9308	0.9666	0.9660	0.06	$\{f_1: 64, f_2: 62, k_1: 12, k_2: 9\}$	$\{u_1: 8\}$
23	imu-in1000-step100	DO	0.0163	0.0556	0.9670	0.9044	0.9524	0.9509	0.02	$\{f_1: 53, k_1: 12\}$	$\{u_1: 22, u_2: 18, u_3: 36\}$
24	**imu-in1000-step100**	**DO**	**0.0142**	**0.0532**	**0.9942**	**0.9814**	**0.9912**	**0.9912**	0.04	$\{f_1: 26, k_1: 9\}$	$\{u_1: 67\}$
25	imu-in1000-step100	DO	0.0497	0.0152	0.9705	0.9120	0.9568	0.9558	0.12	$\{f_1: 54, k_1: 12\}$	$\{u_1: 11, u_2: 59\}$
26	imu-in1000-step100	FO	0.0417	0.0444	0.9816	0.9362	0.9710	0.9715	0.01	$\{f_1: 79, f_2: 94, f_3: 105, k_1: 8, k_2: 14, k_3: 4\}$	$\{u_1: 18, u_2: 9\}$
27	imu-in1000-step100	FO	0.0675	0.0466	0.9718	0.9165	0.9588	0.9578	0.06	$\{f_1: 94, f_2: 27, k_1: 5, k_2: 5\}$	$\{u_1: 65, u_2: 10\}$
	LSTM										
28	imu-in400-step100	SL	0.0596	0.0483	0.9760	0.9253	0.9642	0.9637	0.0		$\{u_1: 41\}$
29	jstate-imu-in400-step100	DC	0.0347	0.0580	0.9689	0.9091	0.9549	0.9536	0.25		$\{u_1: 113, u_2: 13\}$
30	imu-in1000-step100	DC	0.0304	0.0531	0.9791	0.9337	0.9685	0.9682	0.25		$\{u_1: 93\}$
31	**imu-in400-step100**	**DC**	**0.0361**	**0.0707**	**0.9664**	**0.9032**	**0.9517**	**0.9502**	0.25		$\{u_1: 23, u_2: 74\}$
32	imu-in400-step100	DC	0.0383	0.0587	0.9690	0.9078	0.9547	0.9537	0.25		$\{u_1: 53\}$
33	imu-in400-step100	DO	0.0868	0.0616	0.9714	0.9148	0.9581	0.9571	0.25		$\{u_1: 24, u_2: 10\}$
34	imu-in400-step100	DO	0.0395	0.0656	0.9675	0.9028	0.9524	0.9513	0.25		$\{u_1: 95\}$
35	imu-in400-step100	SL	0.0607	0.0519	0.9708	0.9075	0.9560	0.9556	0.0		$\{u_1: 44\}$
36	**imu-in400-step100**	**SL**	**0.0367**	**0.0508**	**0.9701**	**0.9109**	**0.9562**	**0.9552**	0.0		$\{u_1: 53\}$
	ResNet										
37	imu-in1000-step100	FO	0.0812	0.0238	0.9683	0.9085	0.9544	0.9530	0.25		