TABLE I
HYPERPARAMETER SETTINGS.

Hyperparameter	Search Space	*WASH scripted*	*WASH unscripted*	*Extrasensory*
lr	[1e-5, 3e-3)	5e-4	5e-5	1e-4
α	[1e-4, 10)	0.01	0.001	0.06
γ_1	[1e-4, 10)	1	1	0.01
γ_2	[1e-4, 10)	0.03	0.01	0.01
joint dim	[128, 8192]	256	6144	7168
lstm hidden	[8, 2048]	1536	128	16

TABLE II
MODEL PERFORMANCE ON THE *WASH scripted* DATASET. RESULTS ARE IN THE MCC/MACRO-F1 FORMAT (FOR BOTH METRICS, HIGHER NUMBERS INDICATE BETTER MODEL PERFORMANCE).

Category	UI/UA		non-GNN			GNN			Our Model	
Model	**GaitAuth**	**GaitIden**	**ExtraMLP**	**LightGBM**	**CRUFT**	**GCN**	**HGCN**	**HHGNN**	**CLAUDIA**	**Improv.(%)**
Lying Down	.211/.533	.203/.529	.183/.513	.185/.520	.202/.526	.220/.540	.212/.536	.221/.540	.231/.543	4.5/0.6
Sitting	.554/.747	.552/.739	.530/.718	.550/.739	.492/.690	.586/.762	.417/.645	.522/.716	.622/.784	6.1/2.9
Walking	.859/.929	.810/.902	.885/.942	.869/.934	.871/.935	.873/.936	.715/.852	.874/.937	.902/.951	1.9/1.0
Sleeping	.569/.745	.585/.756	.505/.701	.596/.763	.519/.712	.525/.715	.475/.683	.477/.684	.557/.736	-6.5/-3.5
Talking On Phone	.511/.710	.461/.677	.393/.632	.528/.723	.601/.768	.378/.625	.395/.638	.493/.698	.617/.779	2.7/1.4
Bathroom	.347/.612	.280/.561	.316/.576	.348/.598	.362/.614	.330/.590	.285/.570	.313/.577	.453/.673	25.1/9.6
Standing	.330/.587	.313/.581	.356/.598	.345/.597	.380/.622	.390/.634	.304/.591	.342/.591	.442/.662	13.3/4.4
Jogging	.655/.802	.645/.795	.632/.786	.826/.907	.671/.812	.728/.848	.536/.722	.653/.799	.825/.906	-0.1/-0.1
Running	.627/.786	.657/.808	.715/.840	.713/.841	.592/.761	.774/.877	.537/.727	.683/.821	.824/.905	6.5/3.2
Stairs-Going Down	.260/.544	.283/.570	.460/.680	.351/.608	.371/.618	.376/.621	.383/.630	.419/.652	.460/.684	0.0/0.6
Stairs-Going Up	.192/.525	.168/.515	.316/.589	.274/.567	.280/.568	.307/.585	.298/.582	.308/.589	.382/.639	20.9/8.5
Typing	.768/.872	.714/.839	.612/.772	.770/.873	.744/.859	.653/.800	.525/.716	.558/.737	.785/.882	1.9/1.0

TABLE III
MODEL PERFORMANCE ON THE *Extrasensory* DATASET.

Category	UI/UA		non-GNN			GNN			Our Model	
Model	**GaitAuth**	**GaitIden**	**ExtraMLP**	**LightGBM**	**CRUFT**	**GCN**	**HGCN**	**HHGNN**	**CLAUDIA**	**Improv.(%)**
Lying Down	.120/.539	.116/.534	.936/.958	.911/.955	.918/.959	.941/.971	.931/.965	.962/.981	.978/.989	1.7/0.8
Sitting	.117/.557	.111/.554	.797/.889	.755/.876	.772/.885	.781/.888	.801/.900	.870/.935	.923/.962	6.1/2.9
Walking	.097/.432	.093/.435	.554/.539	.560/.746	.535/.730	.580/.758	.578/.754	.718/.846	.813/.902	13.1/6.6
Sleeping	.136/.537	.130/.539	.950/.965	.934/.967	.934/.967	.952/.976	.962/.981	.979/.989	.985/.992	0.6/0.3
Talking	.192/.523	.183/.513	.681/.703	.697/.833	.635/.794	.740/.859	.614/.777	.858/.927	.904/.951	5.3/2.6
Bath-Shower	.050/.355	.045/.378	.496/.404	.729/.848	.495/.703	.648/.798	.659/.805	.780/.880	.790/.887	1.3/0.8
Toilet	.057/.398	.055/.410	.429/.326	.524/.716	.416/.661	.446/.666	.641/.796	.670/.813	.668/.812	-0.3/-0.1
Standing	.120/.447	.115/.465	.621/.648	.573/.760	.578/.762	.639/.802	.563/.748	.766/.875	.861/.929	12.4/6.1
Running	.072/.448	.068/.447	.616/.555	.656/.802	.609/.782	.724/.845	.693/.826	.866/.930	.872/.933	0.6/0.3
Stairs-Going Down	.111/.464	.106/.456	.441/.334	.791/.886	.431/.674	.462/.676	.633/.791	.695/.831	.775/.879	-2.0/-0.8
Stairs-Going Up	.119/.473	.117/.472	.446/.341	.654/.801	.429/.674	.513/.710	.614/.778	.706/.837	.792/.890	12.2/6.2
Exercising	.127/.437	.123/.436	.665/.636	.735/.852	.642/.800	.673/.812	.636/.788	.830/.909	.904/.951	8.9/4.6