



This work is led by Ling-Hao Chen and Xiaobo Xia jointly.

# HumanMAC: Masked Motion Completion for Human Motion Prediction Ling-Hao Chen<sup>1</sup>\*, Jiawei Zhang<sup>2</sup>\*, Yewen Li<sup>3</sup>, Yiren Pang<sup>2</sup>, Xiaobo Xia<sup>4</sup>, and Tongliang Liu<sup>4</sup> <sup>1</sup>Tsinghua University, <sup>2</sup>Xidian University <sup>3</sup>Nanyang Technological University, <sup>4</sup>The University of Sydney

## Empirical Results

	🗆 Main	Results	(Comp	arison	with	the Sta	te-of	the-	Arts)		
		One-Stage # L			iman3.6M				HumanEva		
,	acLSTM [97]	$\checkmark$	$\frac{ APD }{1  0.000}$	$\frac{ADE_{\downarrow}}{0.789} = 1$	1.126 0	1.13	$\frac{D_{\downarrow}}{2}  \frac{AFD}{0.000}$	$\frac{ADE_{\downarrow}}{0.429}$	$\frac{\Gamma D E_{\downarrow}}{0.541}$	$\frac{101ADE_{\downarrow}}{0.530}$	1000000000000000000000000000000000000
9.	DeLi GAN [20]	$\checkmark$	1 6.509	0.483 0	0.534 0.	.520 0.54	5 2.177	0.306	0.322	0.385	0.371
, ,	MT-VAE [83]	$\checkmark$	3 0.403	0.457 0	).595 0.	.716 0.88	3 0.021	0.345	0.403	0.518	0.577
	BoM [7]		1 6.265	0.448 0	0.533 0.	.514 0.544	4 2.846	0.271	0.279	0.373	0.351
	DSF [90]	X	2 9.330	0.493 0	0.592 0.	.550 0.59	9 4.538	0.273	0.290	0.364	0.340
	DLow[89]		3 11.741	0.425 0	0.518 0.	.495 0.53	1 4.855	0.233	0.244	0.343	0.331
	GSPS [45]	×	5   14.757   12.570	0.389 (	0.496  0.514  0.51	.476 0.52	5 5.825	0.233	0.244	0.343	0.331
	MOJO [95] Bel Eusion [5]	X	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	0.412 ( 0.372 (	0.514 0.	.497 0.53 <b>/73 0.50</b>	8 4.181 7	0.234	0.244	0.369	0.347
	DivSamp [14]	X	3   15 310	0.372 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	).474 0.	<b>475 0.30</b>	6 6 109	- 0.220	0 234	-	-
	MotionDiff [75]	×	4 15.353	0.411	).509 0.	.508 0.53	6 5.931	0.220	0.231	0.352	0.320
	HumanMAC	$\checkmark$	1 6.301	0.369 (	0.480 0.	.509 0.54	5 <b>6.554</b>	0.209	0.223	0.342	0.335
	(1) 0.5s	1.0s 1.	5s 2.0s	(2)	0.5s 1	1.0s 1.5s	2.0s	(3)	0.5 1	00. 1.5.	2.0
		*	1 1	K K	TX TA					1.5s	2.08
_	AAA	AP			X X	Î Î	$\Box$		T I	t	A
	, 1654		the set of	4 ~ A	A A		X	h. 7,		K with	
	DLow			ſ		ANT A	A		7 7		T
			// 1///				I MAXIN /				TIM
	GSPS			1		M M	The second se	Y	A A		
	H A	The A					(SM		Also I		ll a
	Ă	*	<b>*</b>		X A				* 1		À
	HumanMAC										K
	🗆 Motio	n Switc	h Abili	itv	4				10	. Rec.	In
			0.0s	0.4	<b>4</b> s	0.85	1	2s	1.69		2.0s
					-~		1.				,
	•			8 2	X	2 /		À	F	1	
	sitting				A	P P	* A	THE A	2	I	<u> </u>
	standing	L	L 6		L	ι ι		L.			2
	6	NA I	A	A	A	A A		A	Å	4	A ↓
		-   [			Γ	r r	F	r	K		K i
		-	-	1 1	, -h	-	九九	-7	Ĺ		
	C	1 T	M	M H	ΎΎ	ľ	K K	R	R	1	t :
	IINe granularity –	1 /	1	1/ 1/	1(		1/ 1/	11	//		N.
	Sianarity			-		A	-	A A	X		A !
		- ng -	TP T	T	TP	TR	TR TR		P		
		( Ohservati	۲ ۲ ion	<i>\</i>	/ \		X X	Ţ	7	יב ביבי דס	I rget
	<b>7</b>	chat D.				C /+:-			and L		1511
	L Lero-	SNOT PI	eaictio	on on A		3 (trair	iea on	rium	uri3.0/	V)	
	① <sup>0.5s</sup>	1.0s	1.5s 2.0s	(2)	0.5s 1.0	s 1.5s	2.0s	(3) <sup>0.5s</sup>	1.00s	1.5s	2.0s
	MMM	MI	ti M	MM	AM	M	A X-	YX	- 7-	X	
	<i>,  ,  ,  , , , , , , , , ,</i>	$, \gamma_{l}$	$\wedge$ ' $\wedge$ '	N'A'	XY	$\gamma$	XX	$\Lambda^{\prime}\Lambda$	$\lambda$	$\wedge$	$\bigwedge$
		/					11/1				
								1	A MAK	-	
											RARE
	Observation	End pose of	n Maria			nd poses of 10 ex	amples	4 a t - 41	· cheffe	a val al r.	M. C. C.
		ground truth —	1	/	- 22	ı	7	X	1	1.	
	TX TX	1×	RF	A A	Ì	17	Å	中	T	A	A
					$\langle \setminus$		( (	4	K.	$\langle \cdot \rangle$	1
	XX	X	TA Y	\$ 1	4	- 7		1	Y	The second secon	K
	/ \ / \	$/ \setminus$	$\rangle\rangle$ (	( <i>)</i>	$\rangle$		) )	)	$\langle \rangle$	] {	$\geq$
	NEM VEM	TEA	LA A	A	A AL	A AA	À	A	1A	KI	КA
	indi i part	. Karl				·\ /' \/\	4		א <i>עין</i> הייין איין	1xt	· / /
		的上口							的社会	<b>.</b> O	
		1 A 1						3			2
						V23		1	14.30		
					P	PARIS		3	1.10		
	/ / 🟅	La Da D							<u>а</u> н.	日日	
		Natch it	:e.e			+			Try it	28-50° 8.	
									•• •		_

For commercial, research, or co-operation purpose, please contact at: thu.lhchen@gmail.com













https://github.com/LinghaoChan/HumanMAC