

Table S1. Detailed results for performance analysis of calling variants from three samples using five variant calling tools with different sequencing technologies (Illumina, Pacbio HiFi, and ONT) in terms of accuracy metrics (precision, recall and F1-score), running time, and memory.

		AI-based										Conventional				
		DNAScope			DeepVariant			Platypus			BCFTools			GATK4		
		Illumina	PacBio HiFi	ONT	Illumina	PacBio HiFi	ONT	Illumina	PacBio HiFi	ONT	Illumina	PacBio HiFi	ONT	Illumina	PacBio HiFi	ONT
INDEL	Precision	0.5878	0.9955		0.8449	0.9949	0.1035	0.9257			0.8775	0.8300	0.0000	0.5842	0.7422	
	Recall	0.8071	0.9954		0.7317	0.9949	0.4232	0.5471			0.6925	0.8829	0.0004	0.7110	0.8969	
	F1score	0.6802	0.9955		0.7842	0.9949	0.1663	0.6878			0.7741	0.8557	0.0000	0.6414	0.8123	
	Precision	0.9620	0.9993		0.9867	0.9995	0.9968	0.9817			0.9861	0.9894	0.8759	0.9600	0.9955	
	Recall	0.9418	0.9994		0.9213	0.9992	0.9769	0.8018			0.9032	0.9964	0.9445	0.9129	0.9960	
HG003 SNP	F1score	0.9518	0.9993		0.9528	0.9994	0.9868	0.8827			0.9428	0.9929	0.9089	0.9358	0.9958	
	Time (hours)	3.4000	11.8333		5.1833	35.6833	105.2167	0.2580			2.5500	36.7500	7.9833	36.6000	100.7667	
	Memory (GB)	3.3100	10.7100		17.3300	51.0800	33.8500	2.8500			0.4938	6.9500	2.1200	Round 1 Round 2	20.6500 29.2200	42.8000 29.2200
	Precision	0.3588	0.9969		0.8770	0.9965		0.9410			0.9076	0.8553		0.6127	0.7446	
	Recall	0.8557	0.9968		0.7940	0.9969		0.6506			0.7775	0.9125		0.7908	0.9233	
HG006	F1score	0.5056	0.9968		0.8334	0.9967		0.7693			0.8375	0.8830		0.6905	0.8244	
	Precision	0.9328	0.9994		0.9917	0.9996		0.9870			0.9898	0.9903		0.9675	0.9957	
	Recall	0.9623	0.9995	N/A	0.9419	0.9994		0.8799	N/A	N/A	0.9452	0.9974		0.9423	0.9961	N/A
	F1score	0.9473	0.9994		0.9662	0.9995		0.9304			0.9670	0.9939		0.9547	0.9959	
	Time (hours)	5.2333	10.7333		4.1667	24.0833		0.3833			2.9500	40.3333		50.1833	96.8500	
HG007	Memory (GB)	4.1500	13.3000		16.4600	53.1500		2.6500			0.4938	7.9200		Round 1 Round 2	24.9000 23.8700	23.9000 28.1100
	Precision	0.3968	0.9953		0.8728	0.9924	N/A	0.9394			0.9050	0.7360	N/A	0.6376	0.5625	
	Recall	0.8452	0.9950		0.7814	0.9933		0.6374			0.7576	0.8941		0.7718	0.9074	
	F1score	0.5400	0.9952		0.8246	0.9928		0.7595			0.8247	0.8074		0.6983	0.6945	
	Precision	0.9395	0.9993		0.9900	0.9995		0.9861			0.9891	0.9898		0.9692	0.9961	
HG007 SNP	Recall	0.9565	0.9993		0.9375	0.9992		0.8668			0.9334	0.9970		0.9335	0.9957	
	F1score	0.9479	0.9993		0.9631	0.9993		0.9226			0.9604	0.9934		0.9511	0.9959	
	Time (hours)	4.5500	12.4167		4.3000	19.9500		0.3833			2.8000	39.8500		45.7833	110.8667	
	Memory (GB)	3.8500	9.4000		16.5600	48.4500		2.6700			0.4943	12.2300		Round 1 Round 2	24.9900 29.2400	36.3500 33.3600