

ANGSD formats

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1 SAF formats

SAF files are files that contain sample allele frequency. These are generated with -doSaf in main ANGSD. These contains either the loglikelihood ratio to the most likely category or the pp. This is determined if the -prior has been supplied. The first 8 bytes magic number determines which SAF version. If no magic number is present then version0 is assumed.

1.1 version 0

First version of the SAF files were simply flat binary double files `PREFIX.saf` along with an associated `PREFIX.saf.pos.gz` which contains the gzip compressed 'chromosome position'. Assuming $nChr$ number of chromosomes, then we have $nChr+1$ categories for each site. The number of sites can therefore be deduced either directly from the number of lines in the uncompressed output of the `PREFIX.saf.pos.gz`, or by using the filesize ($fsize$) of the `PREFIX.saf`

$$\frac{fsize}{sizeof(double) * (nChr + 1)}.$$

1.2 version 1

Second iteration of the saf files now contains two raw files and an index file. Still under development.

`PREFIX.saf.gz` bgzf compressed flat floats. With similar interpretation as version0.

`PREFIX.saf.pos.gz` bgzf compressed flat integer. Representing the position.

`PREFIX.saf.idx` uncompressed binary file containing blocks of data described in 1.2.

First 8 bytes in all three files is 8byte magic number `char[8] "safv3"`. The next `size_t` value is the number of categories of the sample allelefrequency.

Col	Field	Type	Brief description
1	CLEN	size_t	Length of CHR (not including terminating null)
2	CHR	char*	Reference sequence name. Length is CLEN
3	NSITES	size_t	Number of sites with coverage from reference CHR
4	OFF1	long int	CHR offset into the <code>PREFIX.saf.pos.gz</code>
5	OFF2	long int	CHR offset into the <code>PREFIX.saf.gz</code>

Table 1: Content of entry for a single reference name in the `PREFIX.saf.idx` file.

2 fst formats

This section describes the binary output generated by a **realSFS fst index pop1.saf.idx pop2.saf.idx -sfs prior**

2.1 fstv1

First iteration of the fst files contains two files. 1) PREFIX.fst.idx 2) PREFIX.fst.gz. First 8bytes is a magic number determining which binary version.

PREFIX.fst.idx flat file, described in table 2.1.1

PREFIX.fst.gz bgzf compressed binary file.

2.1.1 PREFIX.fst.idx

The fst.idx has a very simple header 8bytes magicheader followed by a **size_t** containing the number of samples for which we have generated fst results.

Col	Field	Type	Brief description
1	CLEN	size_t	Length of CHR (not including terminating null)
2	CHR	char*	Reference sequence name. Length is CLEN
3	NSITES	size_t	Number of sites with coverage from reference CHR
4	OFF1	long int	CHR offset into the PREFIX.saf.pos.gz

2.1.2 PREFIX.fst.gz

Col	Field	Type	Brief description
1	POS1	int	Length of CHR (not including terminating null)
2	acoef1	char*	Reference sequence name. Length is CLEN
3	bcoef2	size_t	Number of sites with coverage from reference CHR

2.2 fstv2

PREFIX.fst.idx flat file, described in table 2.1.1

PREFIX.fst.gz bgzf compressed binary file.

2.2.1 PREFIX.fst.idx

2.2.2 PREFIX.fst.gz

Fixme Fatal:
This is still under
development

Col	Field	Type	Brief description
1	MAGIC	char[8]	magic nr = fstv2
2	NPOP	size_t	Number of populations
3	NPOP_LEN_i	size_t	length of population name_i
4	NPOP_i	char[NPOP_LEN]	name of population_i.
5	NDIM_j	size_t	number of categories for pair j
6	PRIOR_j	double[NDIM_j]	prior for pair j
6	AS_j	double[NDIM_j]	alfa for pair j
6	BS_j	double[NDIM_j]	beta for pair j
7	CLEN	size_t	Length of CHR (not including terminating null)
8	CHR	char*	Reference sequence name. Length is CLEN
9	NSITES	size_t	Number of sites with coverage from reference CHR
10	OFF1	long int	CHR offset into the PREFIX.saf.pos.gz

Table 2: Format of saf.idx file. i loops over number of populations. j loops over number of combinations, in this order pop1/pop2,pop1/pop3,pop1/pop4,pop2/pop3,...

Col	Field	Type	Brief description
1	POSI	int	Length of CHR (not including terminating null)
2	acoef1	char*	Reference sequence name. Length is CLEN
3	bcoef2	size_t	Number of sites with coverage from reference CHR