# 原 FFMPEG结构体分析：AVPacket

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注：写了一系列的结构体的分析的文章，在这里列一个列表：

FFMPEG结构体分析：AVFrame

FFMPEG结构体分析：AVFormatContext

FFMPEG结构体分析：AVCodecContext

FFMPEG结构体分析：AVIOContext

FFMPEG结构体分析：AVCodec

FFMPEG结构体分析：AVStream

FFMPEG结构体分析：AVPacket

FFMPEG有几个最重要的结构体，包含了解协议，解封装，解码操作，此前已经进行过分析：

FFMPEG中最关键的结构体之间的关系

在此不再详述，其中AVPacket是存储压缩编码数据相关信息的结构体。本文将会详细分析一下该结构体里重要变量的含义和作用。

首先看一下结构体的定义（位于avcodec.h文件中）：

```cpp
/* 雷霄骅
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 *
 */
typedef struct AVPacket {
    /**
     * Presentation timestamp in AVStream->time_base units; the time at which
     * the decompressed packet will be presented to the user.
     * Can be AV_NOPTS_VALUE if it is not stored in the file.
     * pts MUST be larger or equal to dts as presentation cannot happen before
     * decompression, unless one wants to view hex dumps. Some formats misuse
     * the terms dts and pts/cts to mean something different. Such timestamps
     * must be converted to true pts/dts before they are stored in AVPacket.
     */
    int64_t pts;
    /**
     * Decompression timestamp in AVStream->time_base units; the time at which
     * the packet is decompressed.
     * Can be AV_NOPTS_VALUE if it is not stored in the file.
     */
    int64_t dts;
    uint8_t *data;
    int   size;
    int   stream_index;
    /**
     * A combination of AV_PKT_FLAG values
     */
    int   flags;
    /**
     * Additional packet data that can be provided by the container.
     * Packet can contain several types of side information.
     */
    struct {
        uint8_t *data;
        int      size;
        enum AVPacketSideDataType type;
    } *side_data;
    int side_data_elems;

    /**
     * Duration of this packet in AVStream->time_base units, 0 if unknown.
     * Equals next_pts - this_pts in presentation order.
     */
    int   duration;
    void  (*destruct)(struct AVPacket *);
    void  *priv;
    int64_t pos;                            ///< byte position in stream, -1 if unknown

    /**
     * Time difference in AVStream->time_base units from the pts of this
     * packet to the point at which the output from the decoder has converged
     * independent from the availability of previous frames. That is, the
     * frames are virtually identical no matter if decoding started from
     * the very first frame or from this keyframe.
     * Is AV_NOPTS_VALUE if unknown.
     * This field is not the display duration of the current packet.
     * This field has no meaning if the packet does not have AV_PKT_FLAG_KEY
     * set.
     *
     * The purpose of this field is to allow seeking in streams that have no
     * keyframes in the conventional sense. It corresponds to the
     * recovery point SEI in H.264 and match_time_delta in NUT. It is also
     * essential for some types of subtitle streams to ensure that all
     * subtitles are correctly displayed after seeking.
     */
    int64_t convergence_duration;
} AVPacket;
```

在AVPacket结构体中，重要的变量有以下几个：

uint8_t *data：压缩编码的数据。

例如对于H.264来说。1个AVPacket的data通常对应一个NAL。

注意：在这里只是对应，而不是一模一样。他们之间有微小的差别：使用FFMPEG类库分离出多媒体文件中的H.264码流

因此在使用FFMPEG进行视音频处理的时候，常常可以将得到的AVPacket的data数据直接写成文件，从而得到视音频的码流文件。

int  size：data的大小

int64_t pts：显示时间戳

int64_t dts：解码时间戳

int stream_index：标识该AVPacket所属的视频/音频流。

这个结构体虽然比较简单，但是非常的常用。



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