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I-P-B Frames



Onur Uzun · Follow

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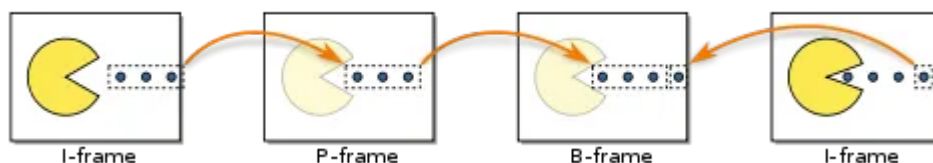
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- I-frames are the least compressible but don't require other video frames to decode.
- P-frames can use data from previous frames to decompress and are more compressible than I-frames.
- B-frames can use both previous and forward frames for data reference to get the highest amount of data compression.



An **I-frame** (Intra-coded picture), a complete image, like a [JPG](#) or [BMP](#) image file. P and B frames hold only part of the image information (the part that changes between frames), so they need less space in the output file than an I-frame.

A **P-frame** (Predicted picture) holds only the changes in the image from the previous frame. For example, in a scene where a car moves across a stationary background, only the car's movements need to be encoded. The encoder does not need to store the unchanging background pixels in the P-frame, thus saving space. P-frames are also known as *delta-frames*.

A **B-frame** (Bidirectional predicted picture) saves even more space by using differences between the current frame and both the preceding and following frames to specify its content.

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7



r	Insertion	Access	Erase	Find	Iterators
vector / string	Back: $O(1)$ or $O(n)$ Other: $O(n)$	$O(1)$	Back: $O(1)$ Other: $O(n)$	Sorted: $O(\log n)$ Other: $O(n)$	No
deque	Back/Front: $O(1)$ Other: $O(n)$	$O(1)$	Back/Front: $O(1)$ Other: $O(n)$	Sorted: $O(\log n)$ Other: $O(n)$	Pointers only
list / forward_list	Back/Front: $O(1)$ With iterator: $O(1)$ Index: $O(n)$	Back/Front: $O(1)$ With iterator: $O(1)$ Index: $O(n)$	Back/Front: $O(1)$ With iterator: $O(1)$ Index: $O(n)$	$O(n)$	Yes
set / map	$O(\log n)$	-	$O(\log n)$	$O(\log n)$	Yes
unordered_set / unordered_map	$O(1)$ or $O(n)$	$O(1)$ or $O(n)$	$O(1)$ or $O(n)$	$O(1)$ or $O(n)$	Pointers only
priority_queue	$O(\log n)$	$O(1)$	$O(\log n)$		



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STL Container Performance Table

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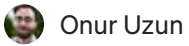


80



2



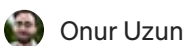


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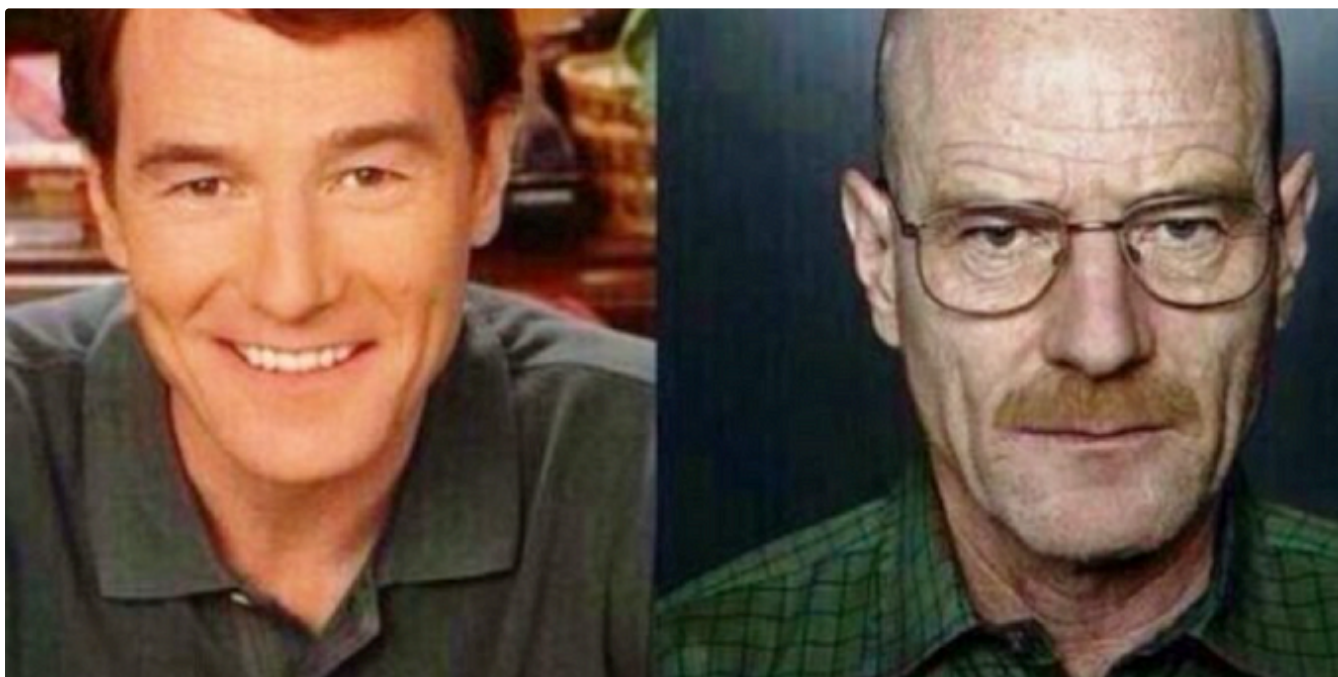
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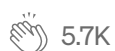


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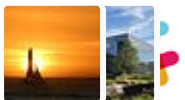
 

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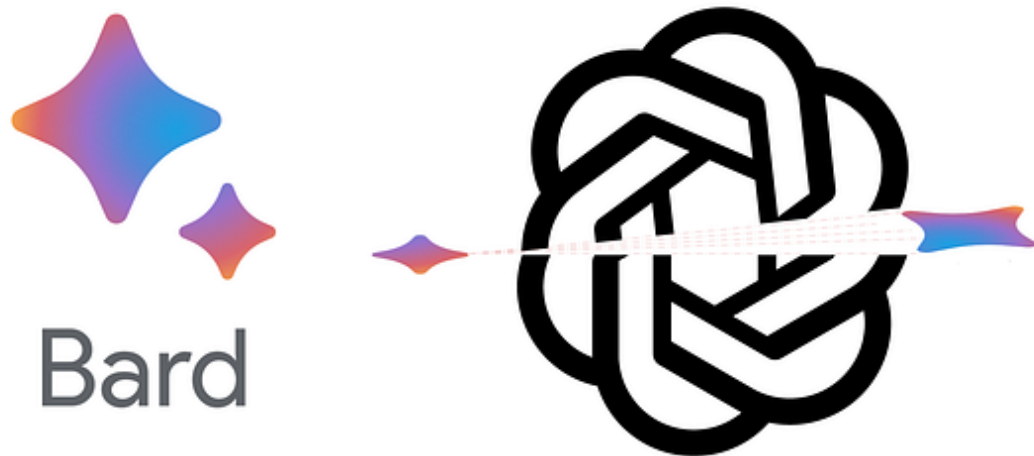
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