

Sandwiched Video Compression: Efficiently Extending the Reach of Standard Codecs with Neural Wrappers



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Neural Video Compression

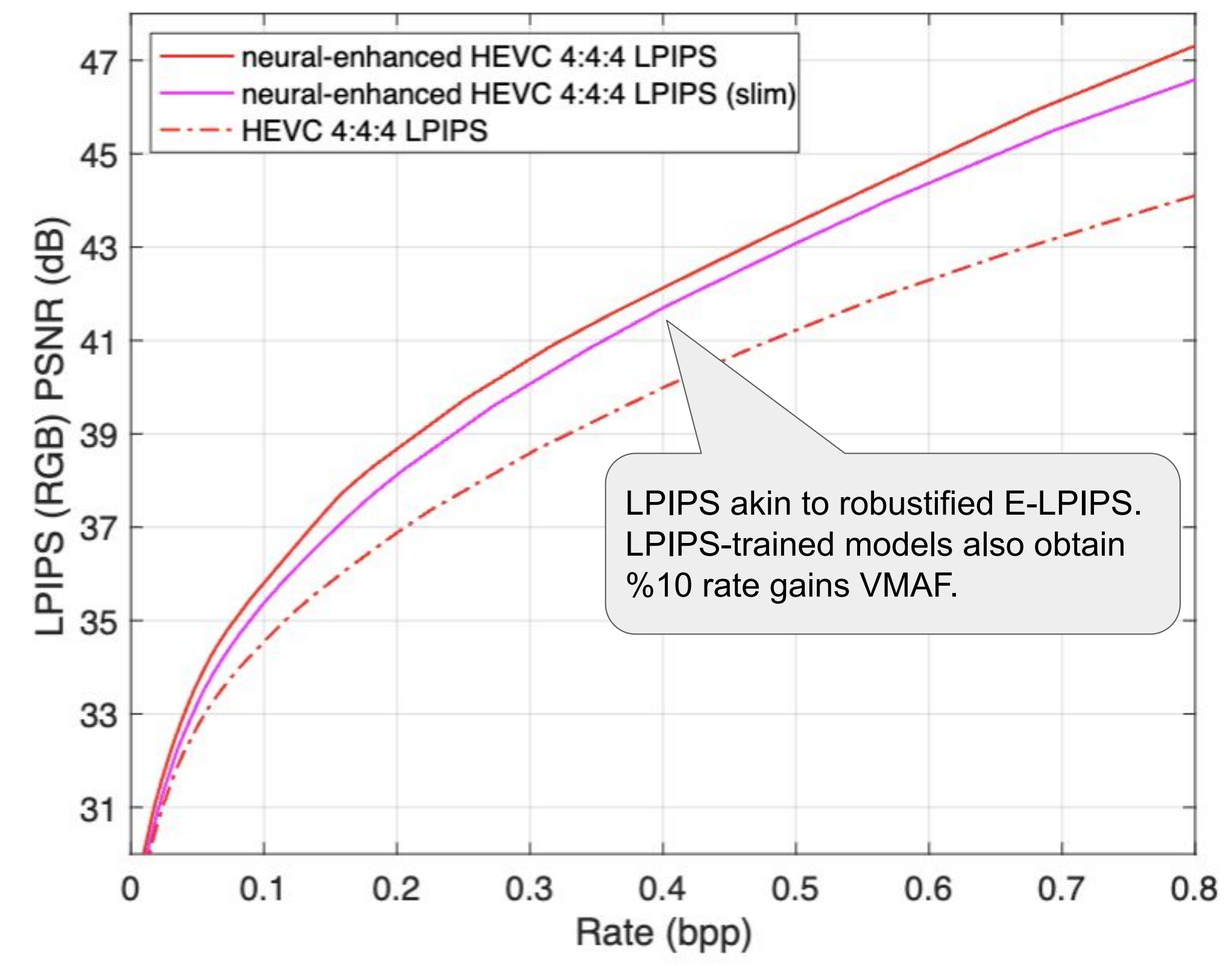
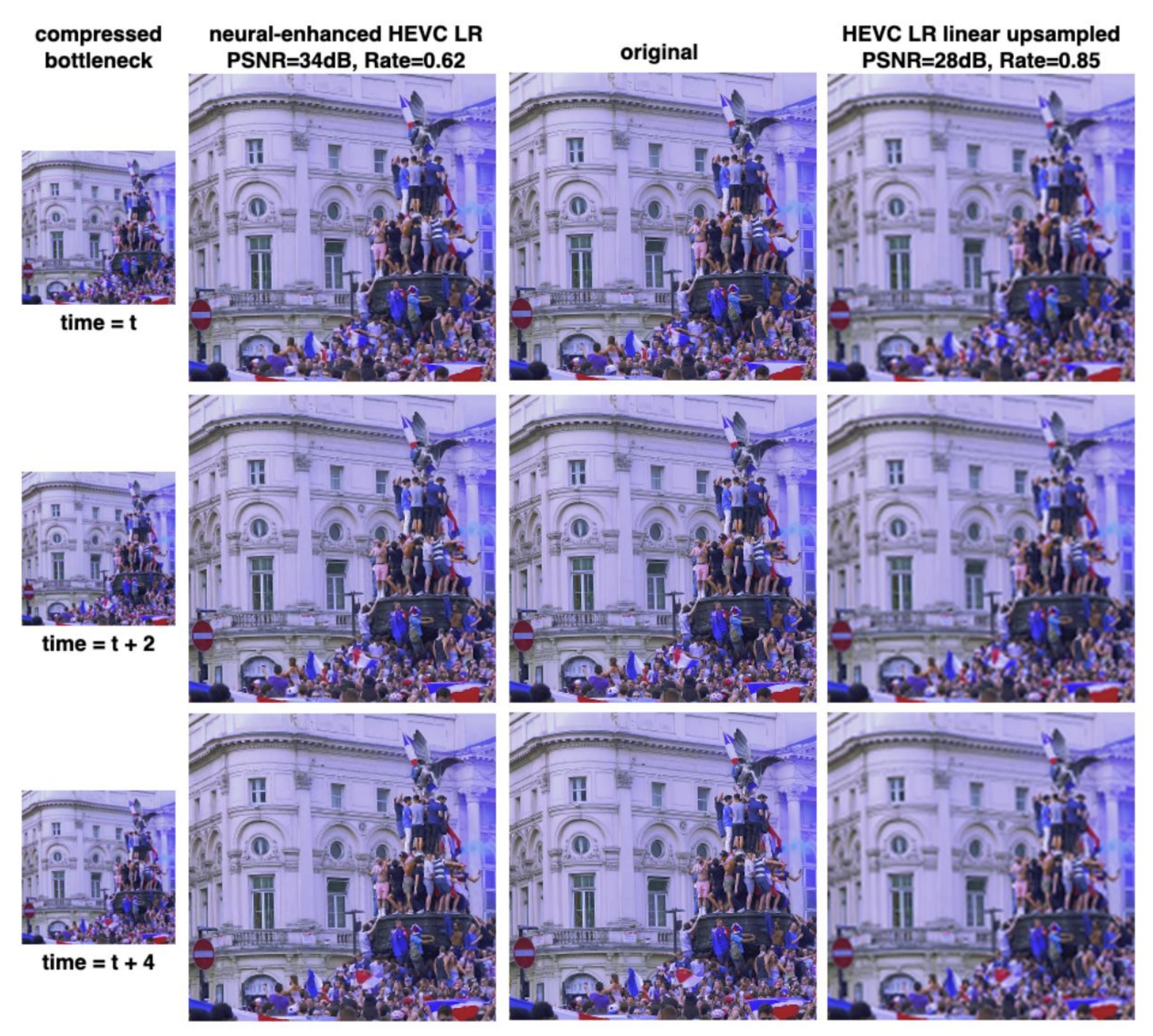
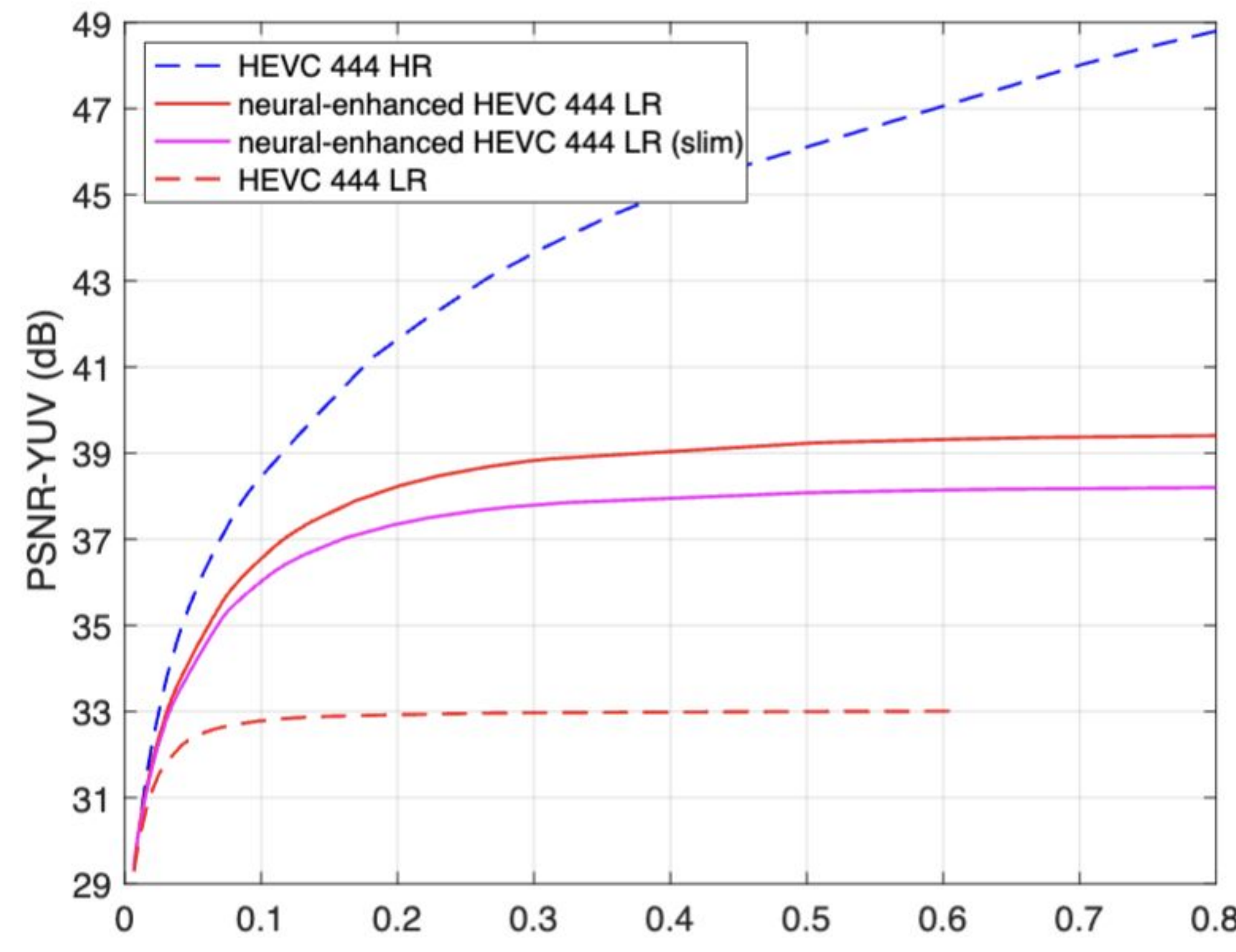
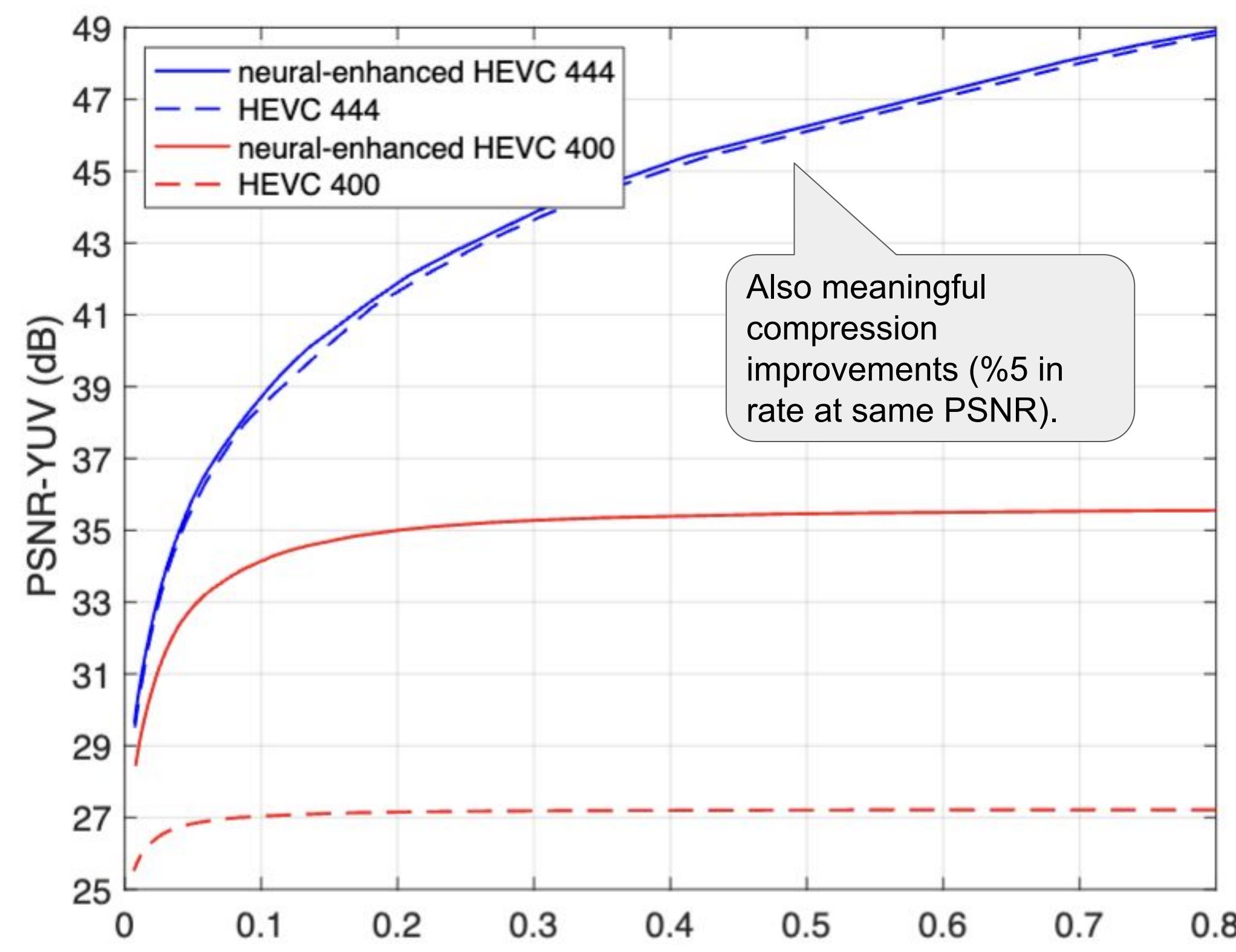
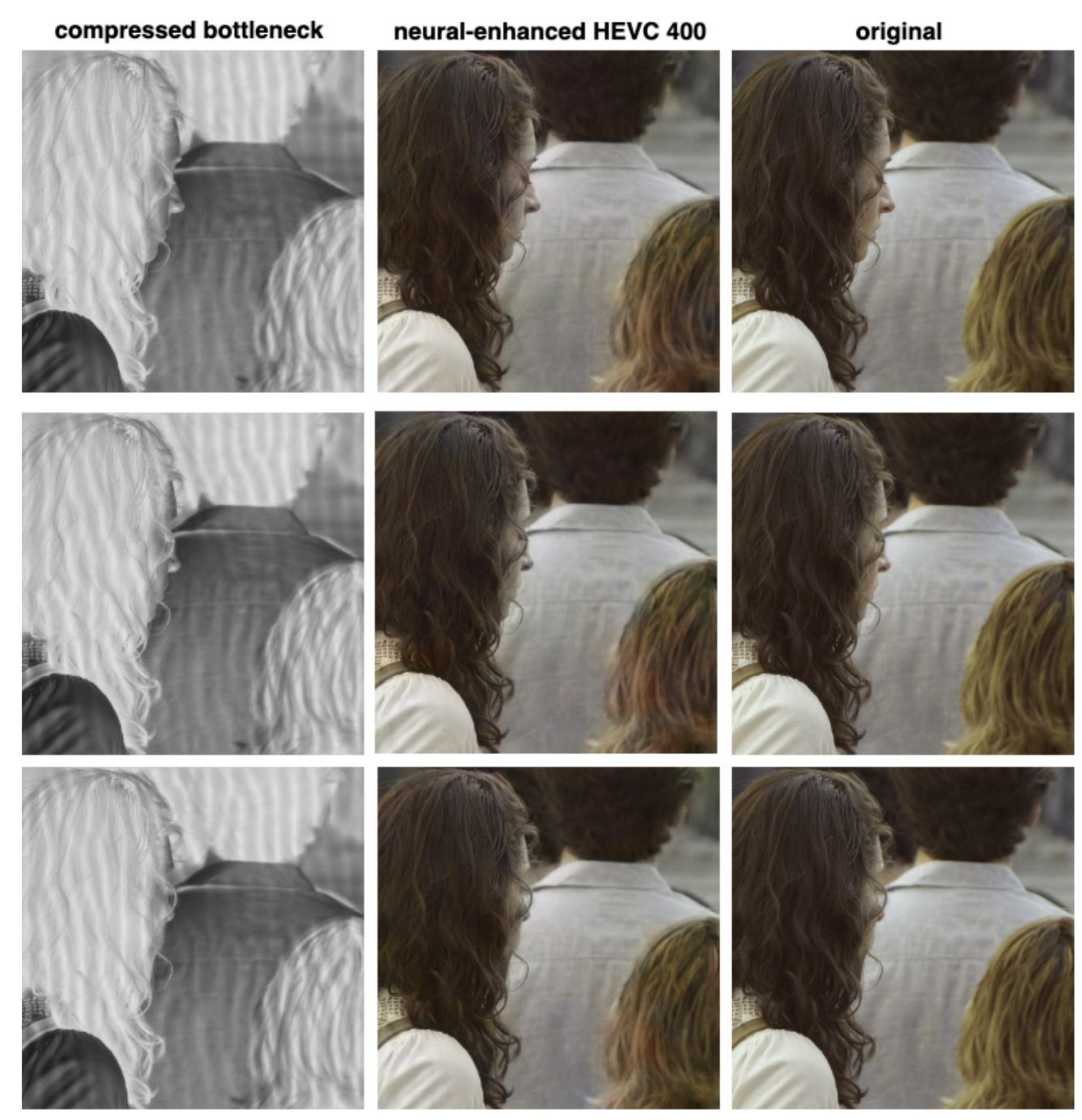
- Pros:**
- Flexible – can learn non-linear transforms
- Cons:**
- Very complex networks (How to predict flows, how to warp the previous reconstructions with the predicted flows, how to do residual compensation)
 - Computationally costly
 - Slow training and inference
 - Memory inefficient

Sandwiched Video Compression

- Keeps pros of neural video compression and avoids cons.
- Adds conveniences of a standard codec while repurposing it for scenarios it is not designed for.
- Incorporates important parts of a video codec into a carefully-designed differentiable codec proxy.
- Works by message-passing/data-embedding between pre-post with temporally consistent modulation patterns.
- LR-HR scenario: 6.5dB improvements.
- LPIPS scenario: 30% improvements in rate at same quality.
- Slim 57K parameter model obtains 99% reduction in parameters over baseline model with similar results.

The codebase will be open-sourced soon!!!

Please ask the presenter to show you clips for all scenarios.



Sandwiched Video Compression Architecture

