



# Turing codec

An open-source HEVC encoder

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# What is the Turing codec?

Turing codec is a **practical** (read: **fast** and **efficient**)

**software video encoder** implementation



Video coding technology is **standardised** to allow interoperability.

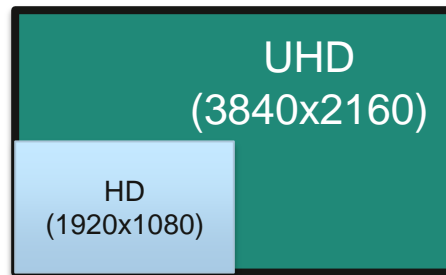
## HEVC: state-of-the-art video compression

# Main features

Designed **from scratch** for **speed**, **efficiency**, **flexibility** and **parallelisation**

Parallel approach: **algorithmic development**  
**codebase optimisation**

Optimised for **UHD** content (4K and above)



Algorithms to **reduce complexity** without sacrificing efficiency

Codebase optimisations to **reduce memory footprint**

**One-to-one mapping with HEVC syntax**

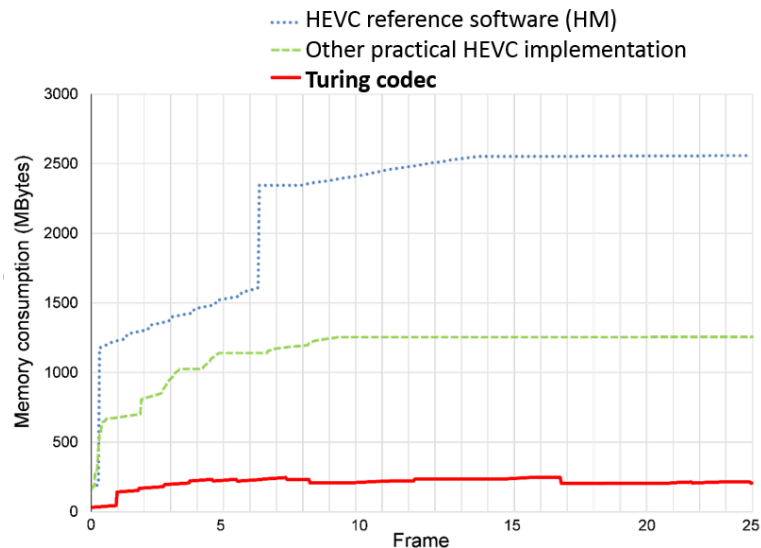
```
if (h[transquant_bypass_enabled_flag()])  
    h(cu_transquant_bypass_flag(), ae(v));  
  
if (h[slice_type()] != I)  
    h(cu_skip_flag(cu.x0, cu.y0), ae(v));  
  
const int nCbS = (1 << cu.log2CbSize);
```

# Why should I use it?

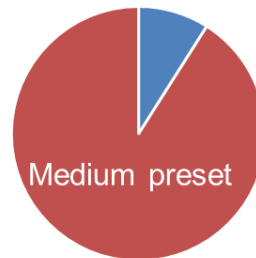
**Usage** is simple and streamlined: only three presets, no need to tweak cfg parameters

```
turing-exe encode --speed medium --frames 400 --input-res 3840x2160 -o out.bit input_file.yuv
```

The Turing codec is **fast**



91% faster for 11%  
BD-rate increase



96% faster for 27%  
BD-rate increase



Memory requirements are **low**



# Turing codec is available now under the GPLv2 licence



The Turing codec is an H.265/HEVC software video encoder and decoder for efficient video compression

The codec is optimised for fast encoding of large resolution video content while at the same time preserving high perceptual qualities of the generated compressed video streams. It was originally developed by experts in video compression technology, software developers with background on practical codec optimisation and experienced researchers with many years of activity in multimedia signal processing. The Turing codec was designed with the ambition of creating the fastest high quality HEVC software encoder. With this purpose in mind, the Turing codec results from a combination of two essential features:

- An optimised software framework composed by state-of-the-art C++11 constructs and assembly optimisations.
- Highly advanced algorithms and coding tools, to ensure efficient encoding of videos at different quality levels under a variety of conditions.

Due to its good compression performance, low memory consumption and low execution time characteristics, we expect the Turing codec to become one of the most widely used open source HEVC software implementations.



Turing codec

Homepage: [turingcodec.org](http://turingcodec.org)

License: [GPL Version 2.0](https://www.gnu.org/licenses/gpl-2.0.html)

Source: [github.com](https://github.com)

Turing codec

The Turing codec is a fast encoder and decoder compliant with the H.265/HEVC standard and designed to provide high efficiency with low usage of computational resources. The codec was originally developed by experts in video compression software developers with background on practical codec optimisation and experienced researchers with many years of multimedia signal processing. The source code is now made available as open source because we want to share our how learned on UHD video compression with HEVC and we also want to invite other people to contribute so that the TC continuously improve and its community grow.

Some pointers:

<http://turingcodec.org>

<https://github.com/bbc/turingcodec>

<http://www.bbc.co.uk/opensource/projects/TuringCodec>

Codec is under **active development**:

we are looking for **collaborators!**

Contact us at:

[info@turingcodec.org](mailto:info@turingcodec.org)

