

# Image sensing and Digital Image

## Report

This report is about the images that have been utilized during the assignment, as well as the details of the device these images have been taken with. The details include but are not limited to: Optics, sensors, resolutions, encoding, file's byte order, name and etc.

## Device

Images were taken with Apple iPhone 13 Pro. The device has a triple-camera system. The first camera is a 12-megapixel wide-angle lens with an  $f/1.5$  aperture, which lets in more light and is perfect for low-light photography. The second camera is a 12-megapixel ultra-wide lens with an  $f/1.8$  aperture, which provides a wider field of view for capturing landscapes and group photos. The third camera is a 12-megapixel telephoto lens with an  $f/2.8$  aperture, which allows for 3x optical zoom and up to 15x digital zoom. The camera system also includes sensor-shift optical image stabilisation, stabilising the sensor rather than the lens, resulting in smoother, more stable shots. The system also includes a night mode that works with all three lenses, allowing for better low-light performance.

Images taken with the iPhone 13 Pro are encoded using the High-Efficiency Image Format (HEIF) compression standard. HEIF is a newer image format that uses advanced compression techniques to provide high-quality images while using less storage space than traditional image formats. HEIF uses a modern image compression algorithm based on the High-Efficiency Video Coding (HEVC) standard, which is also used for video compression. This allows HEIF to achieve higher compression rates than traditional image formats like JPEG while maintaining high image quality. HEIF also supports more advanced image features like HDR, alpha channels, and transparency.

## File Format

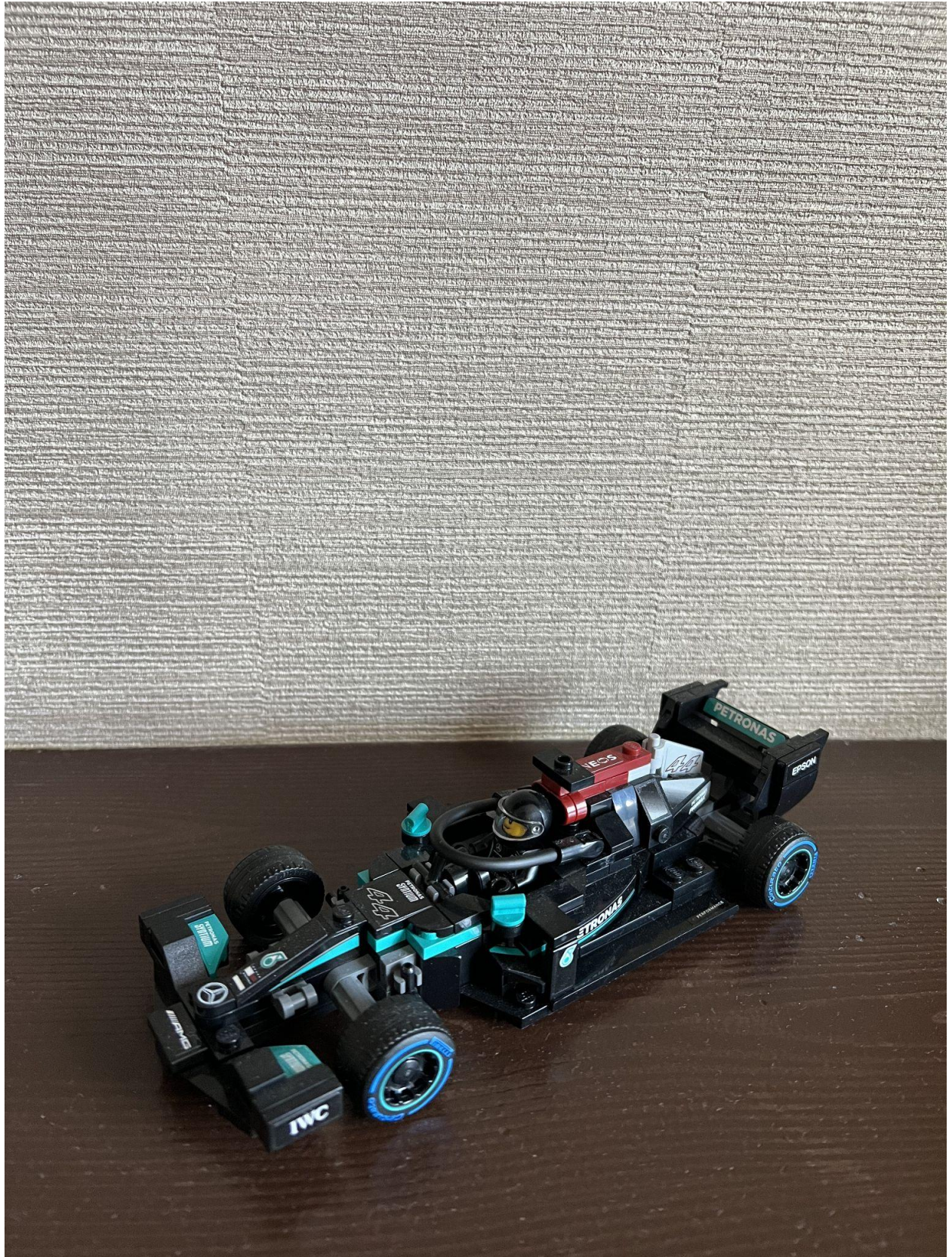
Images taken with the iPhone 13 Pro are typically stored in the HEIC (High-Efficiency Image Format) file format. HEIC files use a binary format to store image data, which means that the image data is stored as a series of 0's and 1's. The byte order of the image data in a HEIC file is determined by the encoding used. HEIC files typically use little-endian byte order, which means that the least significant byte of a multi-byte value is stored first. The encoding used for the image data in a HEIC file is based on the HEVC (High-Efficiency Video Coding) compression standard. This allows

the image data to be compressed more efficiently than with previous image compression standards, resulting in smaller file sizes while maintaining high image quality. The naming of images taken with the iPhone 13 Pro typically follows a standard naming convention, which includes a combination of the date and time that the image was captured, as well as a unique identifier for the image. This naming convention helps to ensure that images are easily identifiable and organized within the device's file system.

## Images

Images were converted to JPEG since HEIC is not supported in Google Docs environment.

Daylight 15:33 p.m.



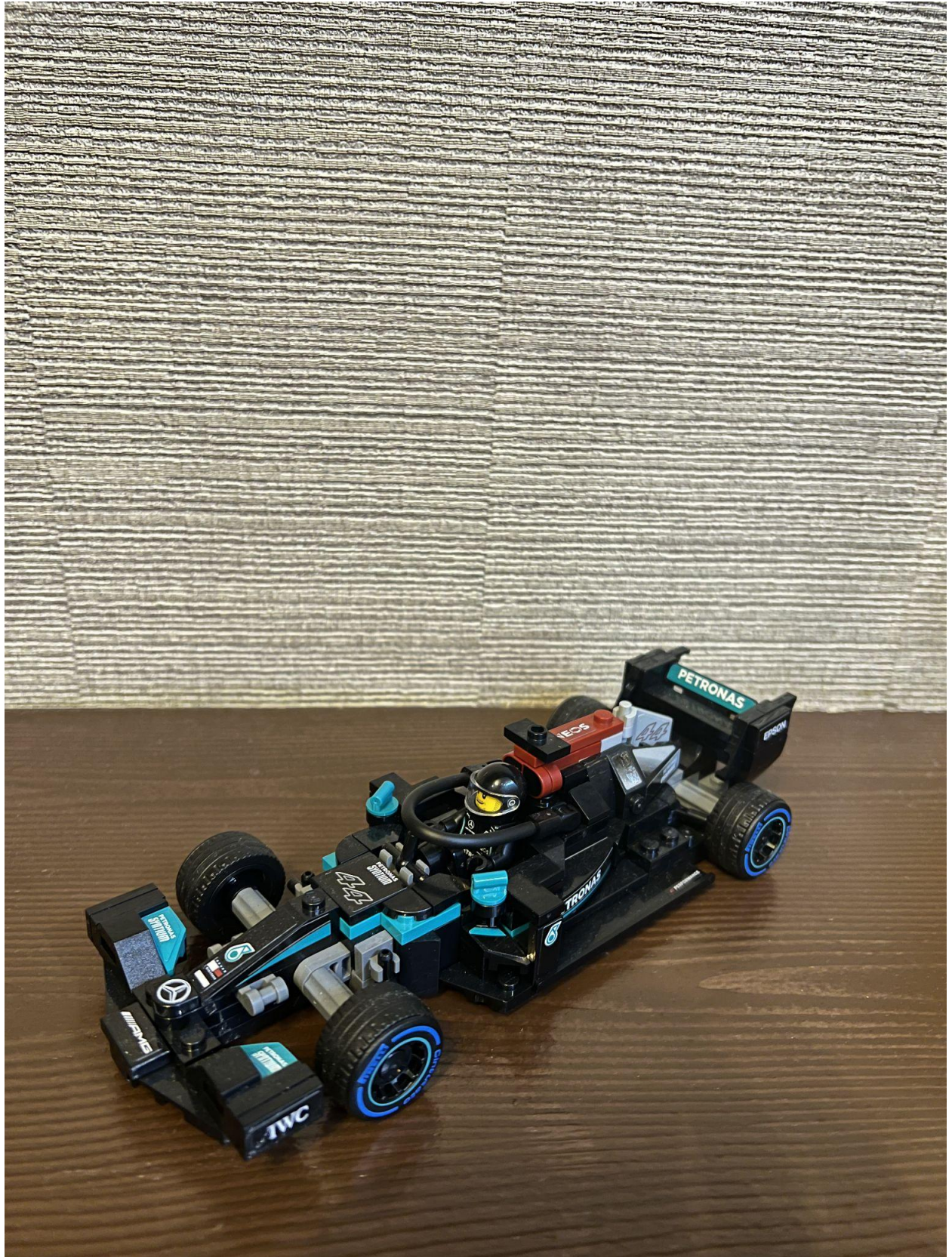


Daylight 18:21 p.m.



Fluorescent bright







Fluorescent dim

