ABSTRACT

Autonomous Underwater Robot is a type of robot that mostly used propeller for it's navigation. Research in the field of underwater robots tends to be a trend lately, such as openROV, a telerobotics DIY project. Development of underwater robots are generally intended for underwater exploration as well as for terrain mapping or to search for natural resources. This type of robot is a solution in the field of water transport automation and very useful for unmanned exploration.

Data acquisition is a common requirement for a monitoring system. In general, as a form of an output sensor. In contrast to controlled robot that require real-time image acquisition, autonomous robot requires only a clear image acquisition possible. Therefore, the type of lossy codec implementations should be avoided for this type of robot. In this final task, we developed a robot using a standard encoding algorithm with High Efficiency Video Coding (HEVC) or H.265. Its framework includes intra-picture compression, inter-picture compression and entropy coding.

The underwater robot in this final project implementation have perform monitoring task and storing the data records using a Lossless HEVC or H.265-based codec, and using frame-shuffling data encryption category. The robot have done a video record of 432x240 quality, with 27.1296% space-saving from intra-picture compression, 7.9776% space-saving from inter-picture compression and a successful CTB based frame-shuffling encryption.

Keywords: codecs, h.265, autonomous robots, encryption of data, a webcam, a sensor.