Cloud gaming is related to rendering a video game in the cloud and stream the game scenes as a video to game players over a network. In this context, the user input signals are sent to the cloud to interact with the game application. Then, the Game Controller Device updates the game state and renders the next game frame. This game frame is then encoded and sent over the network to the client's device.
With of availability of broadband internet access, cloud gaming is rapidly expanded its market among gamers and drawn a lot of attention from researchers. Users no longer need to purchase expensive hardware to run new games and can play on any device that can run video.

Research Opportunities:

- *Video Codec*

Currently H.264 is the video codec for cloud gaming and it has been adopted by the commercial cloud gaming operator. Some additional feature of the current design of H.264 may help us to improve the quality of video coding in cloud gaming platform, which is not used in the current platform. For example, the layered coding approach to separate a game frame into a base layer and an enhancement layer, where the enhancement layer contains some graphics-enhancing instructions can help us to improve the quality of coded video with efficient bitrate. This additional features and also the new video codec such as HEVC may better handle video with particular graphical behaviors. Making these new features available in the current cloud gaming platforms is one of the main research topics in the field.

- *QoE Measurement and Modeling*

Unlike multimedia content such as videos, game play is an interactive process, where users' experience can vary over time and the game contents continuously change depending on what game inputs have been received. Therefore, measuring the QoE provided by a cloud gaming system is a challenging research topic.

- *Rate Adaptation*

Proper rate adaptation is an important issue to keep a balance between gaming experience given the constraints of the network, such as the network bandwidth.
To meet the strict network bandwidth requirements of cloud gaming and support more players, efficient rate adaptation techniques are needed.