

### Intern Requirement

|                                   |   |
|-----------------------------------|---|
| No. of students required          | 1   |
| Preferred Discipline              | <ul style="list-style-type: none"><li>• Electrical Engineering</li></ul>  |
| Prerequisites/<br>Skills Required | <ul style="list-style-type: none"><li>• C/C++ programming</li><li>• Knowledge on digital communication system preferred</li><li>• Good background in statistics/probability</li><li>• Analytical skills</li></ul> |

### Project Details

|                                   |   |
|-----------------------------------|---|
| Title                             | Channel Coding Techniques for Protecting Data Transmission  |
| Overview/Background               | <p>During transmission of data, it is common for signals to undergo disruption as it propagates through the environment. In order to ensure that the recipient can successfully recover the data, a few techniques can be deployed and one such way is the implementation of channel coding.</p> <p>This project involves understanding the design principles behind Forward Error Correction techniques and implementing them into software modules with appropriate application interfaces for integration into a larger communication system.</p> <p>Upon completion of this project, the intern will acquire a good knowledge on communication protocols as well as hands-on experience in development using C/C++.</p> |
| Objectives/Scope/<br>Deliverables | <ul style="list-style-type: none"><li>• Perform research and development in the area of channel coding and communication protocols.</li><li>• Involve in the development of Bit-Log-Likelihood Ratio (Bit-LLR) computation and quantization for high order modulation (8PSK and 16QAM) prior to decoding. (With Bit-LLRs, decoders can leverage on these soft-values and/or a quantized representation to correct more bit errors arising from channel impairments given the same signal power).</li></ul>  |
| Project Duration                  | 6 months  |