Renseignements détaillés

Evaluation of the practicability of using parallel decoders for polar codes

Détails de la recherche

Année de concours :	2014	**Année financière :**	2014-2015
Nom de la personne :	Gross, Warren	**Institution :**	McGill University
Département :	Electrical and Computer Engineering	**Province :**	Québec
Montant :	25 000	**Versement :**	1 - 1
Type de programme :	Programme de subventions d'engagement partenariat	**Comité évaluateur :**	Comité de décision interne pour le Québec
Sujet de recherche :	Transmission des données	**Domaine d'application :**	Technologie des télécommunications (satellites, radar,etc.)
Chercheurs associés :	Aucun associé	**Partenaires :**	Huawei Technologies Canada

Sommaire du projet

All modern communications systems require strong error-correction to ensure reliable transmission of digital data. As the industry drives towards fifth generation (5G) wireless standards, new and stronger error-correction schemes will be required to achieve the desired data rates (gigabits-per-second). Huawei Technologies Canada wishes to evaluate one of these new schemes, called "polar codes" for use in wireless systems. Polar codes are recently introduced error-correcting codes that can achieve the channel capacity with low-complexity encoding and decoding algorithms. Huawei Canada desires to evaluate the practical applications of polar codes to wireless communications and would like to investigate techniques for implementing high-speed decoders. Huawei Canada has identified a parallel algorithm that has the potential for low-complexity and high-speed implementation. This proposed research project consists of realizing a hardware implementation of a decoder for polar codes based on this parallel algorithm to compare with Huawei's existing solutions and to guide them in the choice of architectures. The applicant is an international leader in the design and implementation of signal processing systems. His team is one of the leading research groups working on the implementation of polar decoders. The applicant brings a unique interdisciplinary approach that places his team in a select number of groups worldwide able to tackle this project. The applicant has demonstrated leadership in this area through a body of scientific publications and a record of technology transfer to Canadian industry.