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| VIU acronym_and text | | **Advanced Diploma in GIS Applications**  **Practicum Opportunity Summary** | | |
| Project | Title: | Linear Referencing Data Conversion | | |
| Organisation: | Canadian Pacific Railway | | |
| Location: | Calgary | | |
| Sponsor | Name: |  | Title: | Geotechnical Manager |
| Email: |  | Phone: |  |
| Project Overview | The Canadian Pacific Railway (CPR) has a wealth of database assets that are not geospatially referenced, for example the rock hazard program. This includes various filing structures generally organized by sub-division and mileage (e.g., an offset distance along a rail line from a known location, “linear referencing” in ArcGIS).  Further, CPR is actively developing projects to integrate earth observation data, hi-resolution surveys (both track level and UAV/heli), and machine-learning processes for change detection. GIS is the interface that helps turn this data into actionable knowledge, and augment the experience/expertise gaps resulting from increasing staff turn-over. | | | |
| Task Summary  (Types of work involved) | The project sponsor is open to a collaborative approach to developing the project scope, based on their priorities, and the interest/aptitude of the selected student. For each of the datasets to be converted, the nature of the work may include tasks such as:   * Select a pilot area * Learn and understand the railway location conventions in terms of mileages, sub-divisions etc. * Develop feature class and attribute structures which would accommodate these datasets in a GIS database * Manually import a small number of records to gain some understanding of the processing involved and to refine the database structure * Investigating automated approaches to importing such data (e.g., Python, FME, Model Builder,…) * Potentially validating positions of these events/locations using imagery * Depending upon the pilot area location and the ability of the student to travel, potentially use field inspection to validate positions * Developing an estimate of the level of effort required to import the entire dataset * Documenting the import process and/or database structure | | | |
| Additional Information  (Appealing Aspects) | This is an excellent opportunity to gain an insight on capability of GIS maps for natural hazards along an extra ordinary infrastructure of 12,500 miles of track that spans from Canada down to the U.S. in various kinds of terrain. You will also get an understanding from a field perspective on how important it is to have a practical and user-friendly GIS map system. Student will also have opportunity to provide feedback and present their ideas on the improvement of this system, thus using their creativity; they can make a significant contribution. | | | |
| Funding | None  Minor (< $3,000)  Major (>$3,000) | | | |
| Workplace | Off-site  Full-Time On-Site  Other/Mixture  Description (if Other): | | | |
| Student Selection | Faculty Selection (Student with highest grades selected from among those interested)  Shared Selection (Faculty and Sponsor make selection based on discussion of interested students)  Sponsor Competition (Sponsor interviews, in-person or via telephone, and selects from interested students) | | | |

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