the Black Arcs

Position Title:	**Data Scientist**
Current Incumbent:	**Vacant**
Reports to:	**Director of Technology**
Position Classification:	**IT Support**
Position Remuneration:	**$50,000 - $60,000 annual salary plus health benefits**
Position location:	**Work From Home / Fredericton, NB**
Date prepared/revised:	**December 21st, 2021**

The Black Arcs is a software firm based in Fredericton, New Brunswick, building neighbourhood-level digital twins to support government, the private sector, and academia. Our flexible scenario planning tools are used to evaluate new development opportunities in cities, support decision-makers, and create datasets for researchers. Our mission is to deliver data-driven, intuitive digital twins that foster a deeper understanding of community-level decision making.

1. Purpose of the position:

Reporting to the Director of Technology, the Data Scientist is responsible for data wrangling, API data processing algorithms, and refining models related to synthetic population demographics, behavioural and transportation models, and GiS data.

2. Major Duties and Responsibilities:

Data Wrangling – 30% of time

• Review and update existing data collection processes;
• Source and prepare GiS data for map creation;
• Source and prepare synthetic population data using the PopGen tool in R;
• Update existing assets with most recent data sets;
• Refine existing behavioural and transportation models by comparing agent behaviour to related surveys;
• Identify gaps in datasets and develop reasonable workarounds.

Automated Data Tool Development – 40% of time

• In collaboration with the development team, develop services for various types of data;
• Audit data tool results for accuracy and reliability;
• Iterate on automated data services in collaboration with the development team;
• Collaborate with researchers in ongoing research projects related to uncertainty analysis and disease modelling.

Map Creation – 25% of time

• Create maps for agent-based simulations using the available internal toolkit;

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• Audit maps for representative scale, synthetic population, major landmark placement, and road network connectivity;
• Iterate on map creation tools in collaboration with the software development team.

Policy and Administrative Support – 5% of time

• Policy and procedures implementation;
• Policy and procedure audits related to data management;
• Provide advice on improvements to the Black Arcs data strategies;
• Perform other duties as required.

3. Education and Expertise Required:

Considered an asset but not required; the Data Scientist is ideally in possession of a data science, software engineering, computer science, or related degree. The position also recommends 3+ years of experience in data science work, and familiarity with data-focused programming.

Specific required experience, in order of importance: GiS Data; Statistical analysis; R/Python data analysis; MongoDB; Node.js. Some experience with transportation modelling is beneficial, but not required. Any other modelling/simulation experience is an asset.

Competencies Required include:

• Eliminates inefficiency in work processes and procedures;
• Shares useful information about industry issues and direction within the Black Arcs and helps chart appropriate responses to them;
• Communication and decision-making abilities that supports team cohesion and performance;
• Achievement oriented – an ability to take initiative, and a strong desire to succeed;
• Skills to successfully complete reports on time while adhering to requirements;
• Ability to be impartial and objective;
• Problem solving – an ability to effectively problem solve in a rapidly changing environment.

4. Goals and Performance Metrics

• Consistent data wrangling and utilization procedures;
• Reproducible map and population construction from available data sources;
• Clearly defined data cleanup procedures for commonly-used data sources.

5. Language

• Bilingualism is an asset but not required.

To be considered for this position please submit a resume and cover letter to Luke Robertson via email at luke@blackarcs.org with the subject line "Data Scientist Application."