United Nations Children's Fund
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CONSULTANCY - TERMS OF REFERENCE

DATA SCIENCE CONSULTANT

Division: UNICEF Office of Innovation - Giga, Geneva, Switzerland
*Duration: **12 months (Deliverable-based)***
Duty Station: Geneva, Switzerland

Advertising summary

We are seeking a highly skilled data scientist to join our team and support the analysis and processing of a diverse range of datasets including geospatial data, school location data, mobile coverage data, internet Quality of Service (QoS) data, Internet Provider's data, connectivity pricing data and other socioeconomic data. The successful candidate will support the development of machine learning and/or statistical models to generate new insights that will help Giga achieve its goal of connecting every school to the internet, with a particular focus on developing models to help UNICEF and governments to scale up the procurement of affordable school connectivity services.

Child Safeguarding

Is this project/assignment considered as "Elevated Risk Role" from a child safeguarding perspective? ☐ YES ☑ NO

If YES, check all that apply:

Direct contact role ☐ YES ☑ NO

If yes, please indicate the number of hours/months of direct interpersonal contact with children, or work in their immediately physical proximity, with limited supervision by a more senior member of personnel:

Child data role ☐ YES ☑ NO

If yes, please indicate the number of hours/months of manipulating or transmitting personal-identifiable information of children (name, national ID, location data, photos):

More information is available in the Child Safeguarding SharePoint and Child Safeguarding FAQs and Updates

UNICEF works in some of the world's toughest places, to reach the world's most disadvantaged children. To save their lives. To defend their rights. To help them fulfill their potential.

Across 190 countries and territories, we work for every child, everywhere, every day, to build a better world for everyone.

And we never give up.

For every child...innovate

UNICEF has a 70-year history of innovating for children. We believe that new approaches, partnerships and technologies that support realizing children's rights are critical to improving their lives.

The **Office of Innovation** is a creative, interactive, and agile team in UNICEF. We sit at a unique intersection, where an organization that works on huge global issues meets the start-up thinking, the technology, and the partners that turn this energy into scalable solutions.

About Giga

Launched in 2019 as a joint initiative between UNICEF and ITU, **Giga** has set the ambitious goal to connect every school in the world to the internet. Half of the world's population has no regular access to the Internet. Millions of children leave school without any digital skills, making it much more difficult for them to thrive and contribute to local and global economies. This has created a digital divide between those who are connected and those who are not, a divide that has become even wider during the Covid-19 pandemic. UNICEF and ITU have therefore joined forces to create **Giga**, an initiative to connect every school in the world to the Internet and address this new form of inequality.

Giga focuses on connecting schools so that children and young people have access to information, opportunity, and choice. It also uses schools as anchor points for their surrounding communities: if you connect the school, you can also connect local businesses and services. This creates opportunities for service providers to generate revenue from paying users, making connectivity more sustainable. A 2021 report by the Economist Intelligence Unit found that a 10% increase in school connectivity can increase effective years of schooling by 0.6% and increase GDP per capita by 1.1%.

You can read more about Giga's work at https://giga.global/ and by following us on twitter @Gigaglobal

How can you make a difference?

Giga seeks a data scientist to join one of the most innovative and impactful initiatives at the United Nations whose aim is to connect every school in the world to the Internet and every young person to information, opportunity, and choice. The data scientist will support the development of machine learning and/or statistical models to generate new insights that will help Giga's Procurement Section to better predict global and regional supply and demand of school connectivity to implement a procurement strategy at scale. The data scientist will be part of the Applied Science team, with a primary focus on providing support to the Procurement and Market Influence section based in Geneva. Under the technical guidance of the Applied Science Lead, the consultant will provide applied science support to the Giga Procurement Section and will report to the Market Development Manager.

Your main responsibilities will be / **(Key outputs)**

- Gather and document data sources for school connectivity demand and other critical datasets.
- Familiarize and extend Giga ML utils for its use in school connectivity demand.
- Build an ML/statistical model to estimate school connectivity demand in Africa (number schools per country, as well as their location and connectivity status)
- Develop a tool to scrape and vectorize structured data from unstructured data sources (public contracts).
- Build a country-level ML/statistical model to estimate the costs of connecting schools.
- Build country-level model to predict pricing for school connectivity services.
- Build an interactive app or visualization tool for school connectivity pricing data analysis.
- Capture findings in appealing stories and documentation.

Description of assignment

#	Tasks	Deliverables/Outputs	Delivery deadline
1	Gather and document potential data sources for school connectivity demand.	• Participate in brainstorming sessions. • Propose and document relevant data sources. • Outline how this data source can be used to estimate demand.	1st month.

2	Familiarize and extend Giga ML utils for its use in school connectivity demand and pricing.	• Propose the development of school connectivity demand estimation using Giga ml utils framework.
		• Preliminary results
		• Download, parse, and store the relevant data sources.
		• Extend current library to deal with:
		  ○ Regression.
		  ○ Clustering.
		  ○ Forecasting.
			2nd month.

	Familiarize and extend Giga ml utils for its use in school connectivity demand.		3rd month.
3	Build an ML/statistical model to estimate school connectivity demand in Africa (number schools per country, as well as their location and connectivity status).	Model and preliminary results for Africa.	4th month.

	Build an ML/statistical model to estimate school connectivity demand in Africa (number schools per country, as well as their location and connectivity status).	• Report with estimates and forecasts of demand for Africa. • Adapt/Extend/Replicate analysis to other regions and/or other use cases.	5th month.
4	Develop a tool to scrape and vectorize structured data from unstructured data sources (public contracts).	• PRD and initial development plan • Data sources identification (for example, Open Contracting Partnership) document.	6th month.
		• Final tool to scrape data from Open Contracting Partnership and other public databases.	7th month.
5	Build a country-level ML/statistical model to estimate the costs of connecting schools.	• Use Giga's geospatial model to build connectivity scenarios in target countries. • Use model to extrapolate results to other countries and regions. • Report with insights of connectivity scenarios and associated costs	8th month.
6	Build country-level model to predict pricing for school connectivity services.	• Build model to estimate the pricing of school connectivity services based on its main components (upstream data prices, infrastructure costs, operation costs). • Assessment of the drivers of school connectivity prices per region and country.	9th month.
7	Build or support building an MVP of an interactive app / visualization tool for school connectivity pricing data analysis.	• Support the development of the MVP of an interactive app to visualize school connectivity prices, QoS, and providers across different regions and countries.	10th month.
	Build or support building an MVP of an interactive app /	• Integration of the app MVP into other relevant tools	11th month.

	visualization tool for school connectivity pricing data analysis.	• Functionality to regularly update pricing data.	
8	Final handover.	• Documentation, publications, and handover document. • Next steps document: i.e., feasibility study of the benefits of procuring first-mile wholesale capacity.	12th month.

To qualify as an advocate for every child you will have…

- A master's degree in data science, computer science, statistics. **A first University Degree in a relevant field combined with 2 additional years of professional experience may be accepted in lieu of an Advanced University Degree.*
- Minimum 5 years of professional work experience in data science, computer science, statistics, or a related field with at least 3 years of experience in machine learning or related fields.
- Strong experience in classical machine learning algorithms such as Regression, Classification, Clustering and Forecasting.
- Strong experience in algorithm development in Python
- Experience with cloud services, like AWS, Azure.
- Experienced and comfortable with remote team dynamics, process, and tools (Slack, Zoom, etc.)
- Excellent communication skills and ability to present complex technical concepts to a non-technical audience.
- Experience in the application of the relevant fields in the telecommunications sector is highly desirable.
- Experience with geospatial data is desirable.
- Developing country work experience and/or familiarity with emergency conditions is considered an asset.
- Fluency in English is required. Knowledge of another official UN language (Arabic, Chinese, French, Russian or Spanish) or a local language is an asset.

Travel:

- The consultant is expected to travel to Barcelona six times (6 trips), for a stay of 5 nights.
- The consultant is responsible for arranging his/her own travel, including visa and travel insurance.

Payment details and further considerations

- Payment of professional fees will be based on the submission of agreed deliverables. UNICEF reserves the right to withhold payment in case the deliverables submitted are not up to the required standard or in case of delays in submitting the deliverables on the part of the consultant.
- Consultant is responsible for his/her own health and travel insurance.

- Consultant is responsible to arrange his/her own travel, including visa.
- This consultancy is based in Geneva.
- UNICEF will facilitate the process for obtaining local permits exclusively for the consultant, excluding any dependents.
- For more information on *Non-staff members* IO based in Geneva, you can visit this **link.**

How to apply:

- Interested applicants are required to submit a financial proposal with an all-inclusive fee. Please see the financial proposal template.
- Financial proposal must include travel costs (economy class) and daily subsistence allowance, if travel is required as per TOR and any other estimated costs: visa, travel/health insurance
- **Applications without a financial proposal will not be considered.**

For every Child, you demonstrate…

UNICEF's values of Care, Respect, Integrity, Trust, Accountability, and Sustainability (CRITAS).

To view our competency framework, please visit here.

UNICEF is here to serve the world's most disadvantaged children and our global workforce must reflect the diversity of those children. The UNICEF family is committed to include everyone, irrespective of their race/ethnicity, age, disability, gender identity, sexual orientation, religion, nationality, socio-economic background, or any other personal characteristic.

UNICEF offers reasonable accommodation for consultants/individual contractors with disabilities. This may include, for example, accessible software, travel assistance for missions or personal attendants. We encourage you to disclose your disability during your application in case you need reasonable accommodation during the selection process and afterwards in your assignment.

UNICEF has a zero-tolerance policy on conduct that is incompatible with the aims and objectives of the United Nations and UNICEF, including sexual exploitation and abuse, sexual harassment, abuse of authority and discrimination. UNICEF also adheres to strict child safeguarding principles. All selected candidates will be expected to adhere to these standards and principles and will therefore undergo rigorous reference and background checks. Background checks will include the verification of academic credential(s) and employment history. Selected candidates may be required to provide additional information to conduct a background check.

Remarks:

Only shortlisted candidates will be contacted and advance to the next stage of the selection process.

Individuals engaged under a consultancy or individual contract will not be considered "staff members" under the Staff Regulations and Rules of the United Nations and UNICEF's policies and procedures and will not be entitled to benefits provided therein (such as leave entitlements and medical insurance coverage). Their conditions of service will be governed by their contract

and the General Conditions of Contracts for the Services of Consultants and Individual Contractors. Consultants and individual contractors are responsible for determining their tax liabilities and for the payment of any taxes and/or duties, in accordance with local or other applicable laws. For more information on Non-staff members IO based in Geneva, you can visit this link.

The selected candidate is solely responsible to ensure that the visa (applicable) and health insurance required to perform the duties of the contract are valid for the entire period of the contract. Selected candidates are subject to confirmation of fully-vaccinated status against SARS-CoV-2 (Covid-19) with a World Health Organization (WHO)-endorsed vaccine, which must be met prior to taking up the assignment. It does not apply to consultants who will work remotely and are not expected to work on or visit UNICEF premises, programme delivery locations or directly interact with communities UNICEF works with, nor to travel to perform functions for UNICEF for the duration of their consultancy contracts.