The Organisation for Economic Co-operation and Development (OECD) is an international organisation comprised of 37 member countries, that works to build better policies for better lives. Our mission is to promote policies that will improve the economic and social well-being of people around the world. Together with governments, policy makers and citizens, we work on establishing evidence-based international standards, and finding solutions to a range of social, economic and environmental challenges. From improving economic performance and creating jobs to fostering strong education and fighting international tax evasion, we provide a unique forum and knowledge hub for data and analysis, exchange of experiences, best-practice sharing, and advice on public policies and international standard-setting.

The Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) helps local and national governments to unleash the potential of entrepreneurs and small and medium-sized enterprises (SMEs), promote inclusive and sustainable regions and cities, boost local job creation, and implement sound tourism policies. It includes the Secretariat serving the Regional Policy Development Committee (RDPC) and its three Working Parties on Urban Policy, Rural Policy and Territorial Indicators, the Working Party on SMEs and Entrepreneurship (WPSMEE), the Tourism Committee and its Working Party on Tourism Statistics, and the Local Economic and Employment Development (LEED) Directing Committee.

The Centre for Entrepreneurship, SMEs, Regions and Cities (CFE) is looking for a dynamic and motivated Data Science intern with a solid quantitative profile and a strong experience in image processing, satellite imagery analysis and large-scale geospatial data. The selected candidate will work under the supervision of the data scientist of the Economic Analysis, Statistics and Multi-level Governance Section within CFE.

1 Context

The COVID-19 pandemic has reached almost every country and has had an unprecedented impact on the world economy. This crisis has shown the need for policy makers to get access to reliable real-time statistical indicators to monitor economic and human activity. Economic activities impact social behaviors, which can be easily monitored on satellite images. Satellite imagery can support policymakers by providing a different kind of visibility into economic changes. Economists have often relied on night-light to measure economic activity [1]. However recent papers have leveraged more advanced methods, such as image segmentation, object recognition, or unsupervised machine learning, to monitor economic activities [4], economic development [6], and land-use changes on day-light images [3].

Earth Observation data have also been extensively used to monitor the environment and climate systems. The new generation of Sentinel satellites: Sentinel 5P, launched within the Copernicus program now enable to record reflectance of wavelengths important for measuring atmospheric concentrations of ozone, methane, formaldehyde, aerosol, carbon monoxide, nitrogen oxide, and sulphur dioxide, at a high spatial resolution. Such data will provide valuable information for policy-makers to track down air pollution and territorial anthropogenic greenhouse gas emissions in OECD countries. For example, [5] used Sentinel 5P data to assess the impact of COVID-19 on the emission of NO$_2$ in Europe.

The goal of this internship is to contribute to the satellite imagery task force of the CFE, within the Geospatial Lab initiative, and to contribute to the development of real-time statistical indicators for OECD regions and cities based upon unconventional data sources. The intern will work together with the CFE data scientist to first identify the most relevant economic or environmental indicators that can be derived...
from earth observation data and investigate the most state-of-the-art models in the remote sensing research community to derive such indicators. The intern will then implement these methods in Python, review their performances and select the best approach, to finally build insightful data visualizations to share his/her results.

2 Candidate’s profile

2.1 Background

• An advanced university degree in science or engineering in a relevant field, such as mathematics, computer science, data science, econometrics.

• Coursework in some of these topics would be a strong asset: machine learning, statistics, economics, image analysis, computer vision and object recognition, satellite imagery analysis (optical and synthetic-aperture radar images), geo-statistics, econometrics.

• International experience in research and analytical activities, through studies, internships or previous employment.

• Strong interest for economics, and public policy.

2.2 Skills

• Proficiency in Python is required.

• Knowledge of Python frameworks for deep learning (tensorflow, pytorch), machine learning (scikit-learn), geospatial analysis (geopandas, rasterio, gdal), data visualization (matplotlib, bokeh, seaborn).

• Familiarity with public satellite imagery data providers, such as Google Earth Engine API [2].

• Strong communication skills.

• Fluency in one of the two OECD official languages (English and French) and knowledge of the other, with a commitment to reach a good working level.

3 Conditions

• Expected duration of 6 months, from April to September 2021.

• Be citizen of an OECD member country.

• Be enrolled within a university/school able to sign internship agreements with the OECD.

• The selected candidate will receive an allowance of 702 €/month.

4 Contact

• Create a profile on the OECD career portal, Taleo.

• Send an email with your resume and a cover letter to alexandre.banquet@oecd.org and paolo.veneri@oecd.org.
References


