

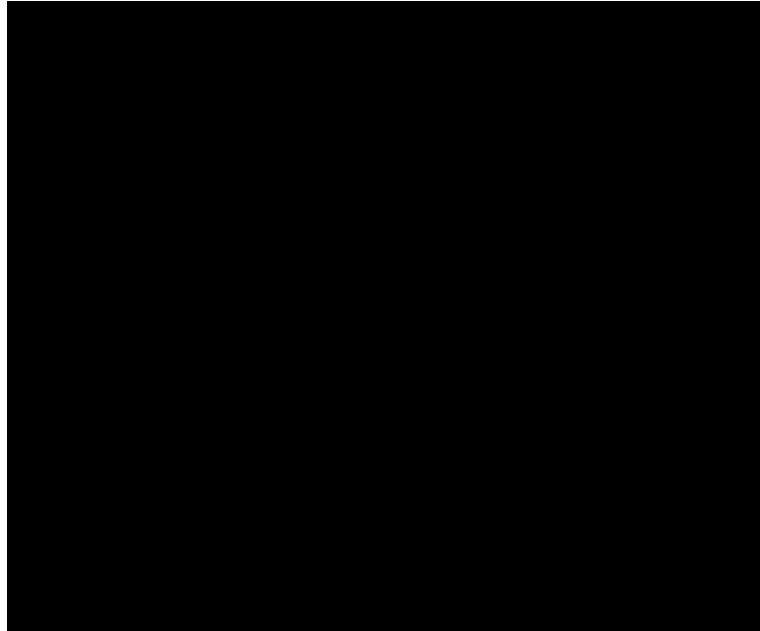
OpenStreetMap: Caminos para Contribuir a la Geobase de Datos más Grande del Mundo

Josué Rodríguez G.

ccoss 2020

¿Qué es OpenStreetMap?

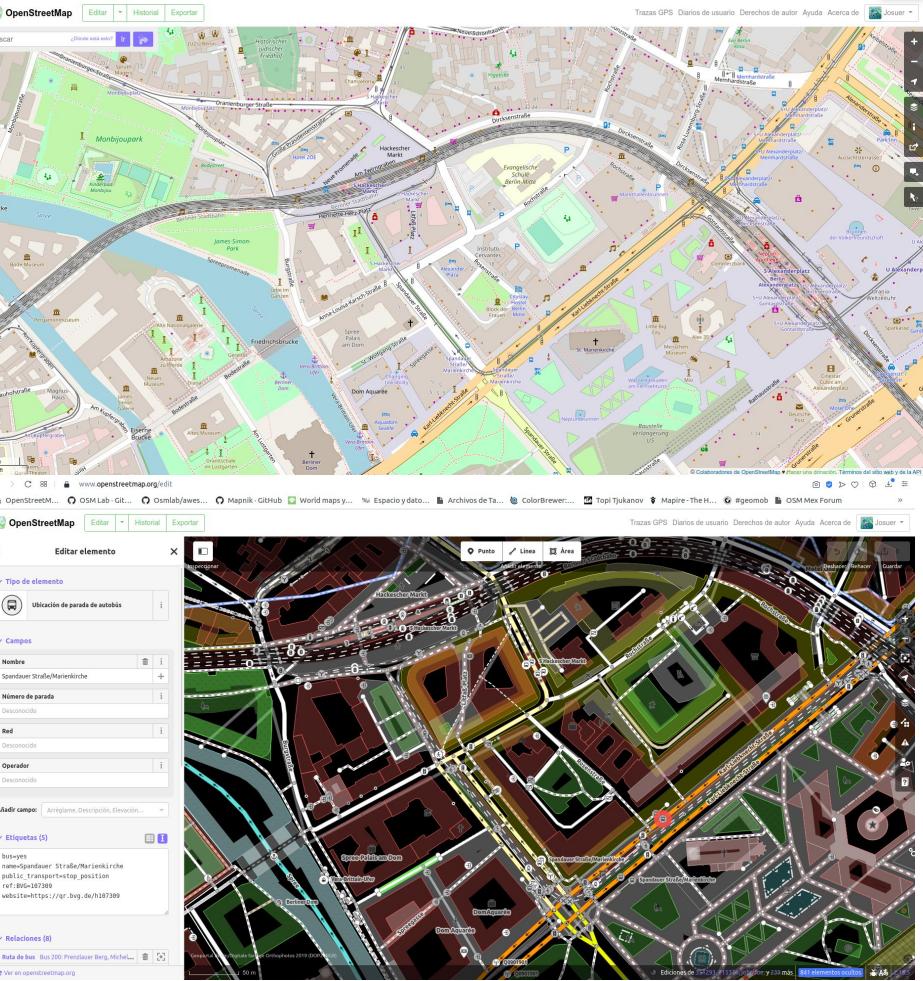
- Con 1304 GB es la base de datos geográficos abierta y gratuita más grande del mundo.
(53,3 GB de comprimido en PBF)
- Más de 6 millones de contribuidores y creciendo.



Por Mikel Maron y Contribuidores OSM

¿Qué es OpenStreetMap?

- Un proyecto donde todos pueden contribuir y agregar objetos, “Wikipedia de los Mapas”.
- Un proyecto mundial realizado en varios idiomas.
- Con licencia ODBL cualquiera puede acceder a los datos del mapa de OSM de forma gratuita, es usado en muchas aplicaciones.



¿Qué hay en OpenStreetMap?

- Casi de todo, la comunidad OSM recopila datos sobre carreteras, vías fluviales, rutas para bicicletas, negocios, edificios parques y áreas naturales, uso del suelo, recursos culturales y mucho más.
- Hay más de 40 categorías principales y cientos de tipos individuales de datos que se recopilan.

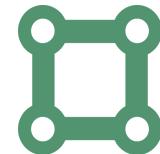
Puntos



Líneas



Áreas



Highway [editar código]

Key	Value	Element	Comment	Rendering carto ↗	Photo
Roads [editar código]					
These are the principal tags for the road network. They range from the most to least important.					
highway	motorway	<input checked="" type="checkbox"/>	A restricted access major divided highway, normally with 2 or more running lanes plus emergency hard shoulder. Equivalent to the Freeway, Autobahn, etc..		
highway	trunk	<input checked="" type="checkbox"/>	The most important roads in a country's system that aren't motorways. (Need not necessarily be a divided highway.)		

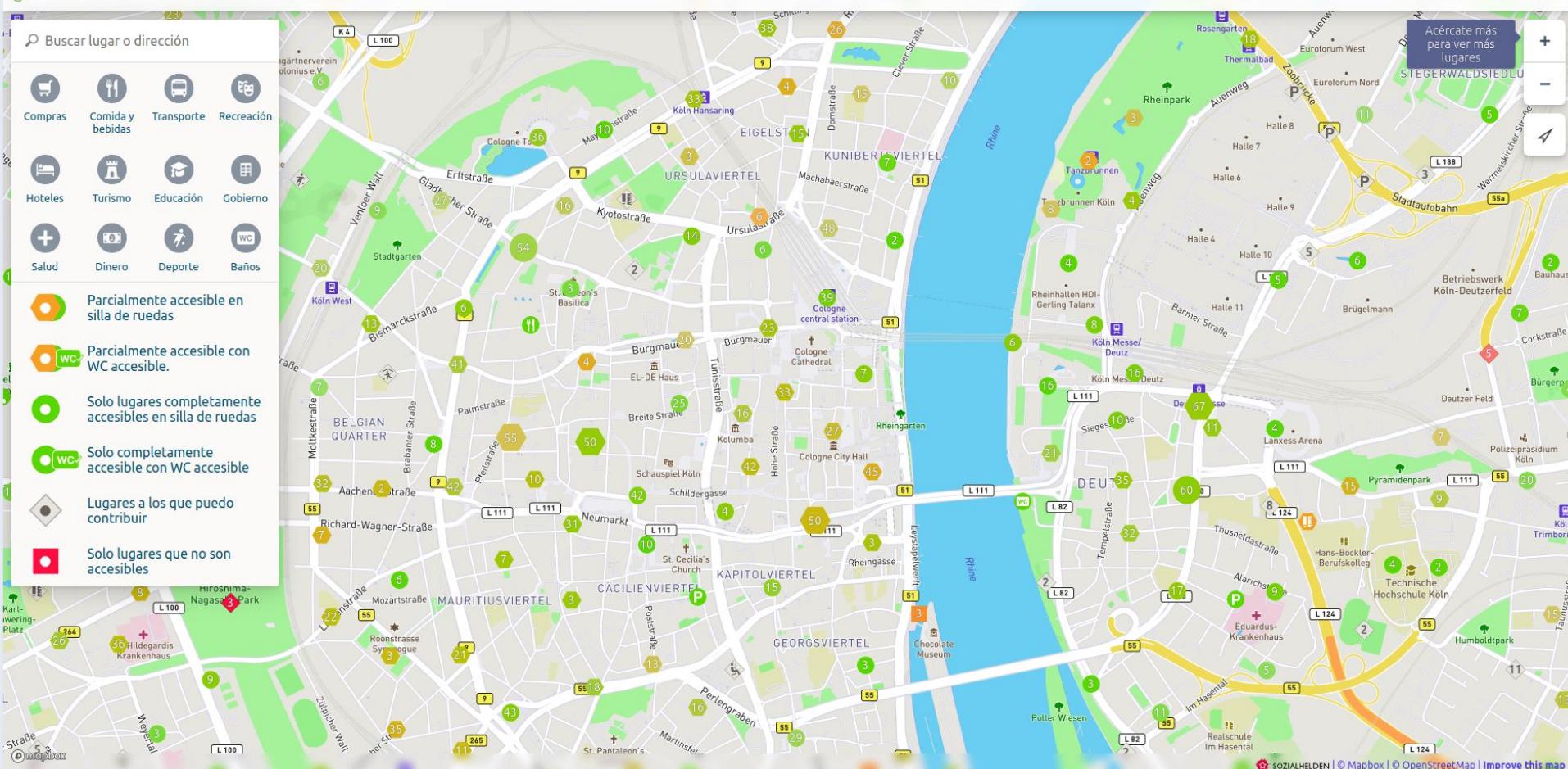
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© OpenStreetMap Contributors

Hay Comunidad



Activismo



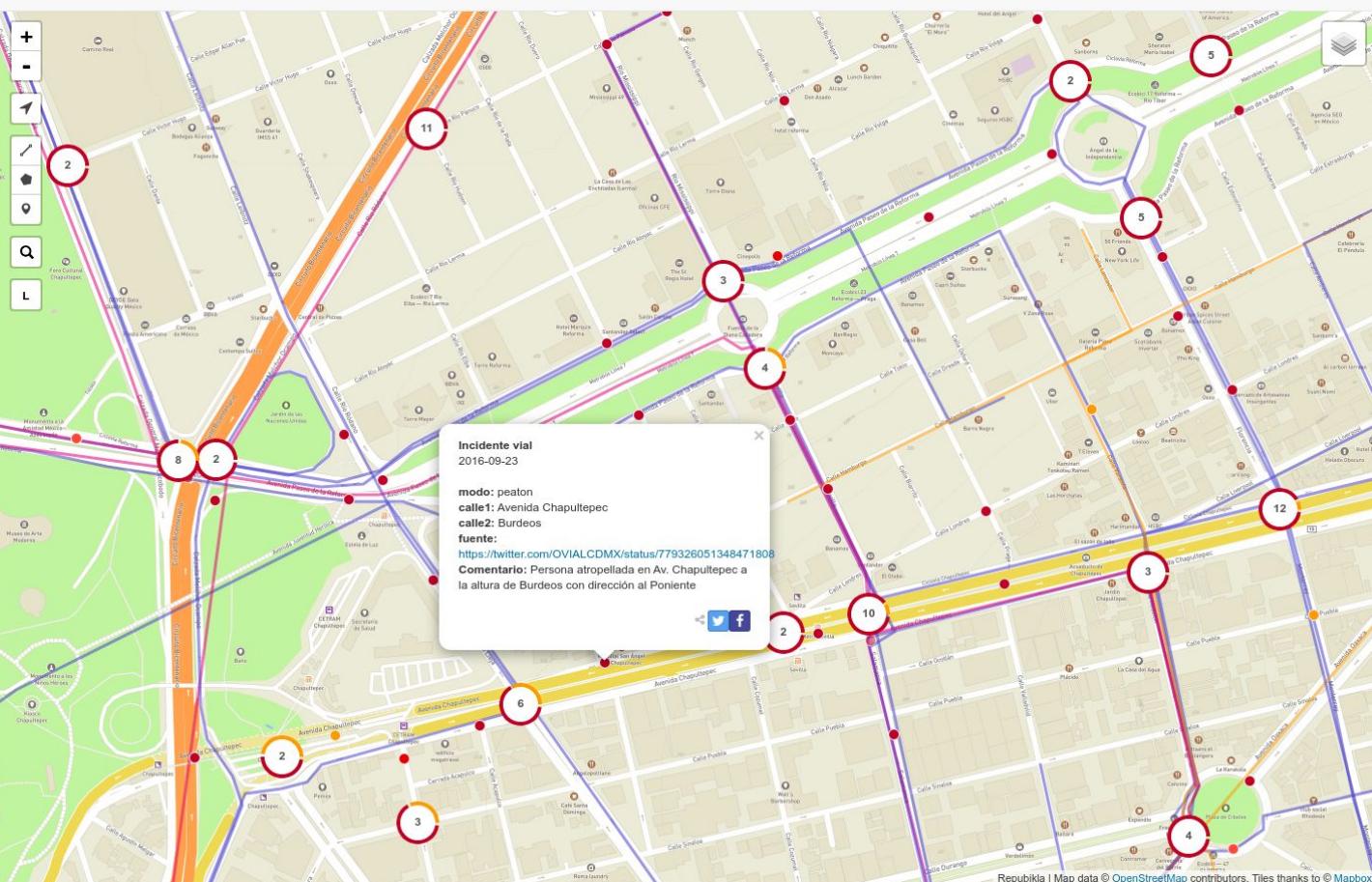
Filtrar datos

Mostrar puntos de tipo:

No mostrar puntos

Marcar todos Desmarcar todos

- Incidente vial
- Asalto
- Robo de bicicleta en estacionamiento
- Robo de bicicleta estacionada en la calle
- Bicicleta blanca
- Cruce peligroso
- Diseño urbano peligroso
- Condiciones peligrosas
- Comercio/Servicio Bikefriendly
- Colectivo/Punto de encuentro
- Vehículos estacionados en carril confinado
- Vehículos en movimiento en carril confinado
- Comercio en carril confinado
- Invasión recurrente de banqueta





Filtrar datos

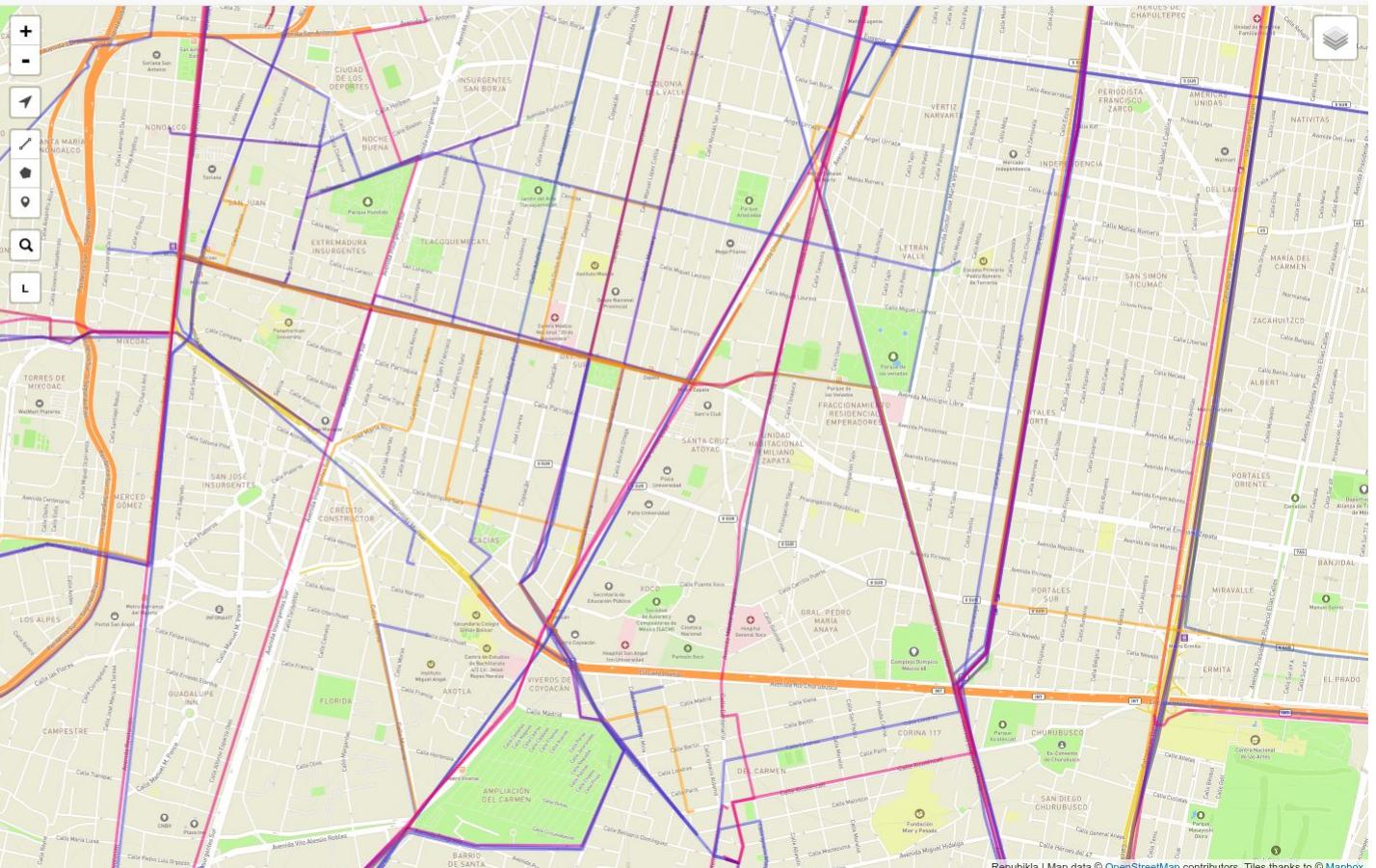
Mostrar puntos de tipo:

No mostrar puntos

Mostrar rutas con motivo:

10 items seleccionados

- Ir al trabajo
- Regreso a casa
- Desplazamientos de trabajo
- Estudios
- Visitas
- Compras
- Paseo, turismo
- Deporte
- Comida
- Otra actividad



LAS CALLES DE LAS MUJERES

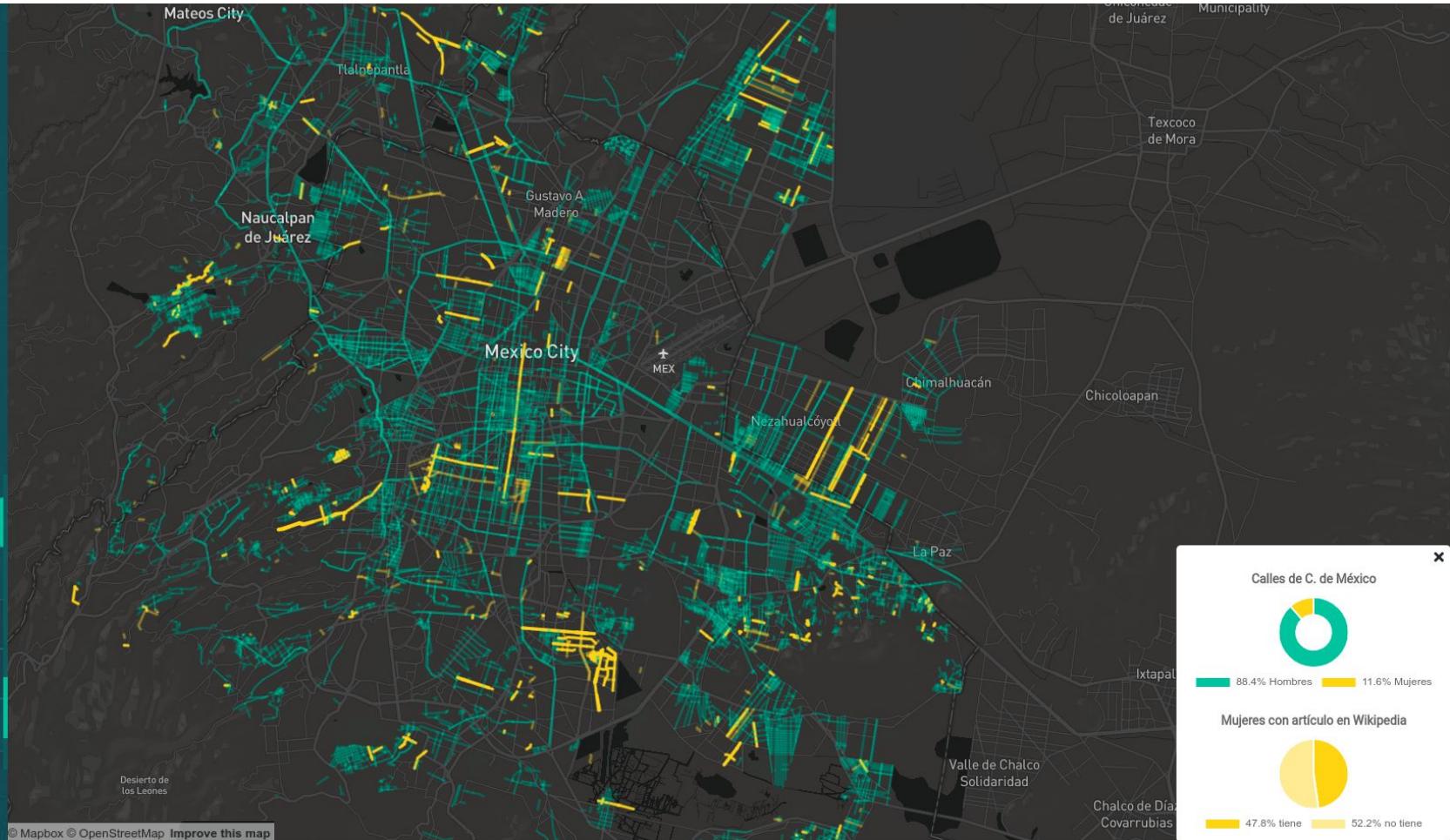
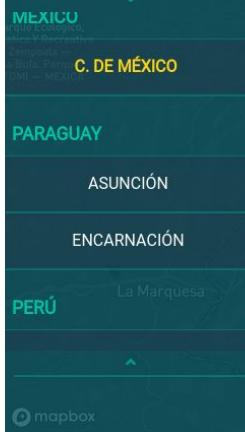


Mapa generado a partir de las calles con nombre de mujeres, en diferentes ciudades de habla hispana (Latinoamérica y España).

El objetivo es visibilizar la brecha que existe históricamente en la representación de figuras femeninas en las calles de las ciudades.

Un proyecto de
GEΩCHICAS

@GeochicasOSM
geochicasosm

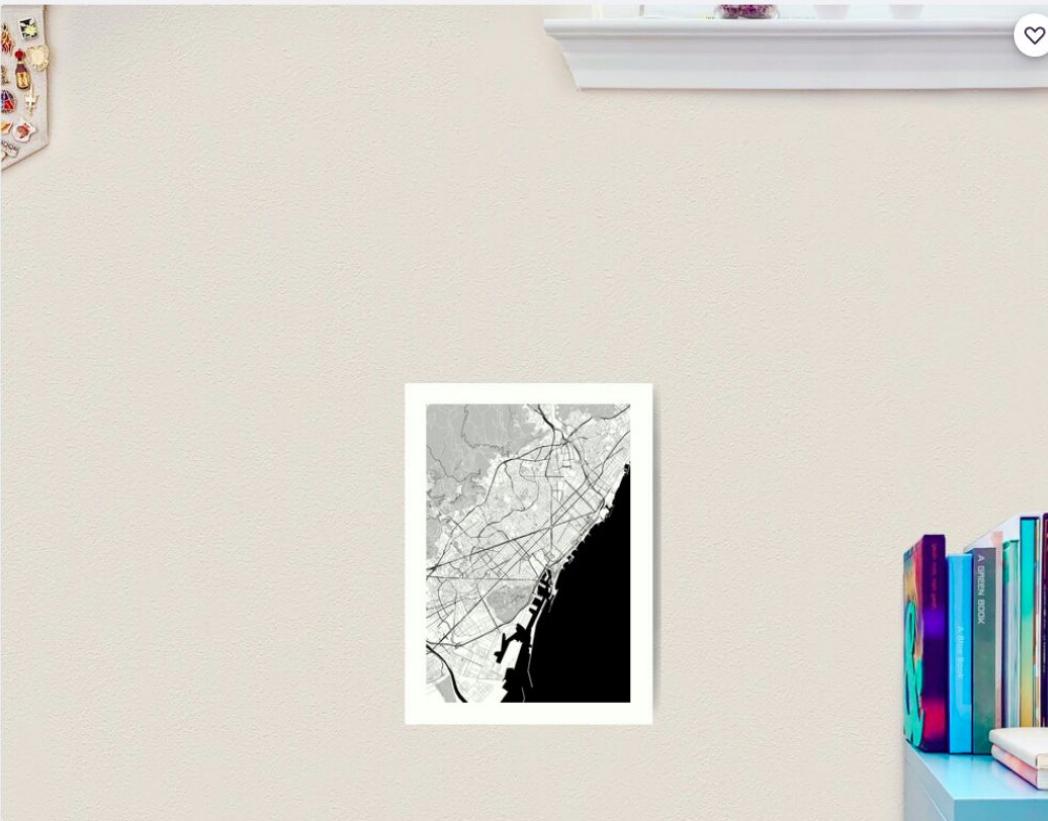
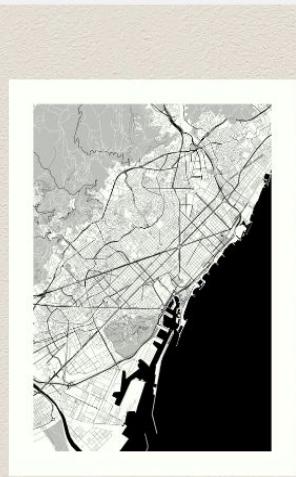


Arte y Creatividad



Olivia R De Yañez, Avenida Francisco Javier Mina, San Juan de Diós, Guadalajara, Jalisco, 44360, México

Altos Del Mercado Libertad
Sienta bien Jalisco
Un pájaro silba

[Ropa](#)[Pegatinas](#)[Mascarillas](#)[Fundas de móvil](#)[Decoración](#)[Hogar](#)[Niños y bebés](#)[Accesorios](#)[Papelería](#)[Regalos](#)[Descubrir diseños](#)

Cartel Barcelona OpenStreetMap Lámina artística

Diseño de Traut1

18,52 US\$

15,74 US\$ al comprar 2+

Tamaño

Pequeño (12 x 16 in)

Añadir al carrito

Ver guía de tallas

Envíos

Con envío urgente: 28 de octubre

Con envío ordinario: 10 - 12 de noviembre



Humanitario

Buscar

¿Dónde está esto?



El Emi in Naturaleza - OpenStreetMap Argentina

Buen dia! les cuento que desde el miércoles a las 23:30 hasta el jueves a las 11:30 estuvimos trabajando bomberos del Cuartel 113 de La Granja, junto con vaqueanos de la zona, en un área cercana al Uritorco (<https://www.openstreetmap.org/#map=14/-30.7991/-64.4639>) en lo que fue el último foco de este incendio que duró 12 días.

Mientras estuvimos allá arriba, sin conexión a internet, tuvimos la ayuda de nuestro amigo OsmAnd con los mapas que ustedes estuvieron editando! con lo cuál ubicamos caminos y ríos cercanos que nos ayudaron a diagramar la estrategia de combate del fuego ahí mismo, y luego el repliegue hacia las camionetas que quedaron arriba.

El fuego ahora está apagado, pero el riesgo sigue durante la temporada de incendios, que cada vez dura más y es más intensa, en especial por las consecuencias del cambio climático, en conjunción con otras causas. Los mapas detallados de OSM salvan bosques.

Gracias infinitas a toda la comunidad!!

OpenStreetMap

OpenStreetMap is a map of the world, created by people like you and free to use under an open license.



t.me/OSM_Naturaleza/5882

Aug 28 at 07:14



Working to support and build OpenStreetMap

All of this work is done through [OpenStreetMap](#). OpenStreetMap is the community-driven free and editable map of the world, supported by the not-for-profit OpenStreetMap Foundation. HOT works around the globe to support and increase the use of OpenStreetMap and help build local OpenStreetMap communities.

Learn more about OpenStreetMap

[OpenStreetMap Foundation](#) > [OSM Wiki](#) > [Local community discussions](#) >



OUR IMPACT

HOT's work is global in scale and contributes to the achievement of the Sustainable Development Goals (SDGs). Our Monitoring and Evaluation framework is constantly evolving to ensure tangible and measurable impact. Check out our core impact areas and learn more about where we're making a difference.



[Disaster Risk Reduction](#)

[Transportation](#)

[Poverty Elimination](#)

[Gender Equality](#)

[Sustainable Cities](#)

[Refugee Response](#)

[Environment](#)

[Public Health](#)

[Disaster Response](#)

[Clean Energy](#)

[Water & Sanitation](#)

HOT is an international team dedicated to humanitarian action and community development through open mapping.



Open Cities Monrovia project activities were centered on addressing flooding and challenges relating to flooding through the provision of up-to-date data of Zone 300, the area of interest. Flooding in Monrovia is cyclical and occurs during the rainy season every year (April - October).

Impact Areas ⓘ
[Disaster Risk Reduction](#)
[Sustainable Cities](#)
[Water & Sanitation](#)

Coordination Ⓜ
[David Luswata](#)
[Paul Uithol](#)

Partners ⓘ
[Global Facility for Disaster \(GFDRR\)](#)
[Open Data for Resilience](#)
[World Bank](#)



1 FIN
DE LA POBREZA



2 HAMBRE
CERO



3 SALUD
Y BIENESTAR



4 EDUCACIÓN
DE CALIDAD



5 IGUALDAD
DE GÉNERO



7 ENERGÍA ASEQUIBLE
Y NO CONTAMINANTE



8 TRABAJO DECENTE
Y CRECIMIENTO
ECONÓMICO



9 INDUSTRIA,
INNOVACIÓN E
INFRAESTRUCTURA



10 REDUCCIÓN DE LAS
DESIGUALDADES



11 CIUDADES Y
COMUNIDADES
SOSTENIBLES



13 ACCIÓN
POR EL CLIMA



14 VIDA
SUBMARINA



15 VIDA
DE ECOSISTEMAS
TERRESTRES



16 PAZ, JUSTICIA
E INSTITUCIONES
SÓLIDAS



17 ALIANZAS PARA
LOGRAR
LOS OBJETIVOS



HOT TASKING MANAGER

 HOT Tasking Manager

Proyectos

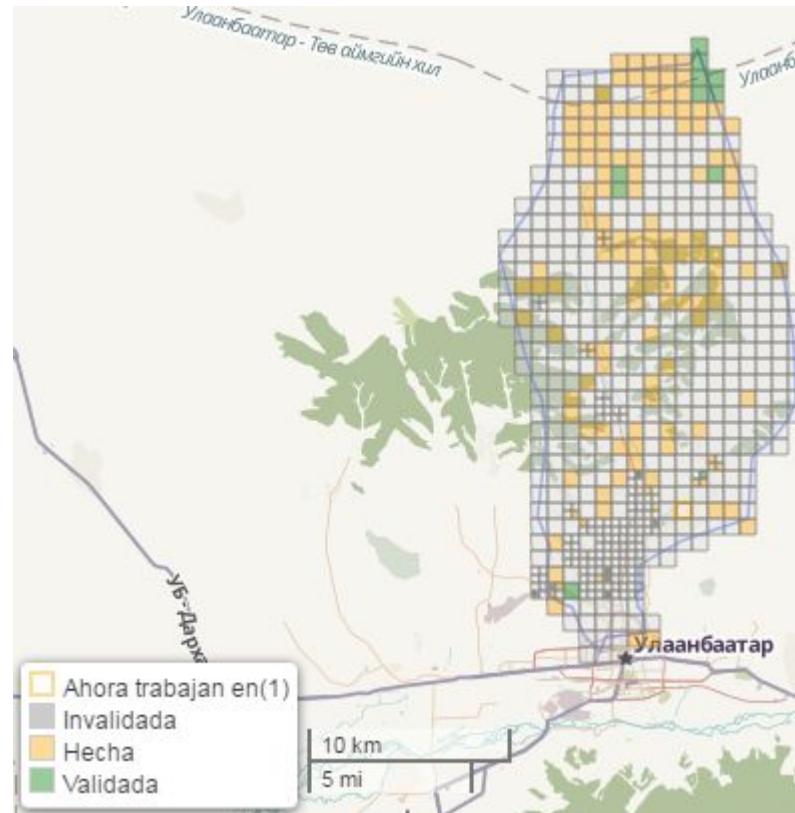
Buscar Ordenar por: Alta prioridad primero ▾ Tus proyectos

#2022 Mapping Ulaanbaatar, Mongolia - Su'xbaatar and Chingeltei Districts  1 27%
Mapping of Ulaanbaatar, the Capital City of Mongolia. Монгол Улсын нийслэл хот - Улаанбаатар хотын газрын зураглалд мэдээлэл оруулах.
Creado por russdefnner - Actualizado hace unos 23 minutos - Prioridad: media

#2017 Thimphu Thromde building footprints import  100%
This project is for experienced mappers

- Author: HOT
- Requesting organization: HOT
- Priority: Medium
- Imagery: Bing/Mapbox

Import of building footprints in the Thimphu city area from the Thimphu Thromde (Thimphu city council).
Creado por edvac - Actualizado hace 2 días - Prioridad: media



HOT TASKING MANAGER (CONT)

The screenshot shows the HOT Tasking Manager interface. On the left is a legend with the following categories:

- Ready (white square)
- Mapped (yellow square)
- Bad imagery (dark grey square)
- Validated (green square)
- Invalidated (red square)
- Locked (blue square)

The main area displays a map of Bogotá, Colombia, with various streets labeled in Spanish. A specific area in the northern part of the city is highlighted with a yellow bounding box. The top right corner of the map area contains the text "ACTIVITY AND STATS".



Mapping

This task is available for mapping.

[START MAPPING](#)

[SELECT ANOTHER TASK](#)



Mapping

Get started by choosing your editor of choice.

iD Editor

[START EDITOR](#)

[Download](#) this task as a gpx file to see its boundary.

Innovación

RESEARCH ON MAPPING WITH OPEN MACHINE LEARNING

HOT Program · Global · ACTIVE



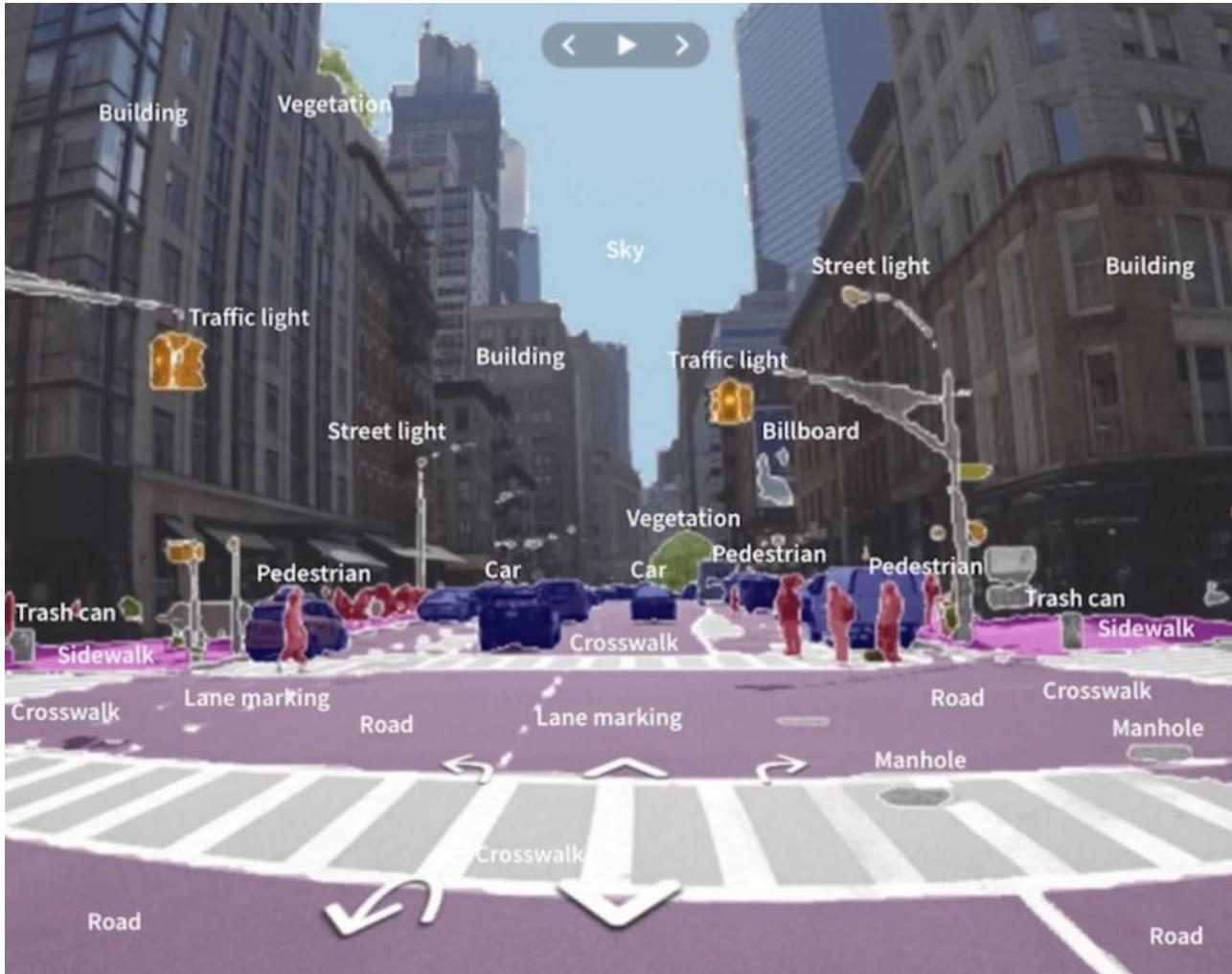
HOT is working with the Netherlands Red Cross to have an evidence-based look at current AI-supported mapping flows and to take the next step towards using OSM data for training machine learning models.

[Impact Areas](#) ⓘ
[Disaster Risk Reduction](#)



Mapillary





Point

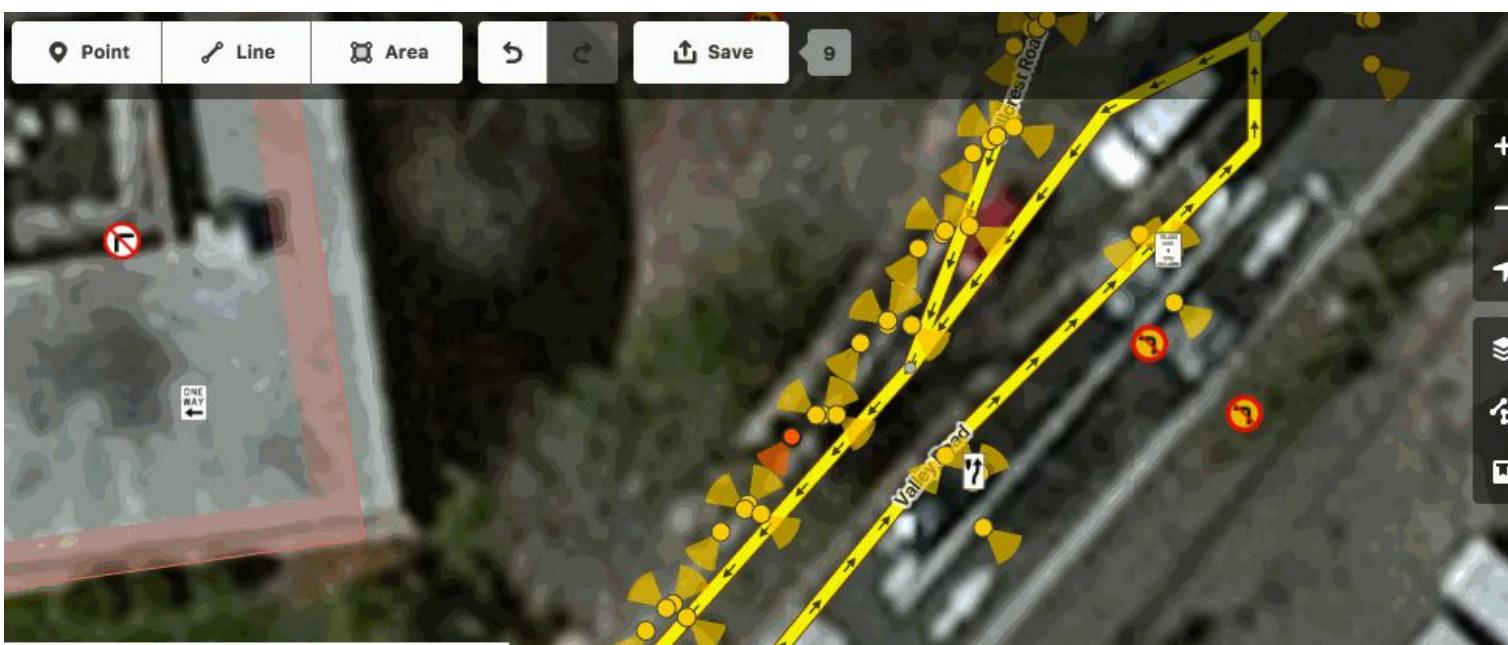
Line

Area



Save

9



Search features

Point

Line

Area



Save

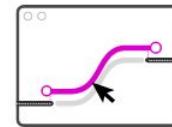
8

Search





Artificial Intelligence Detected
Roads



Mapping the World w/ RapiD
Editor



Humanitarian Prioritized
Community Task Mapping

ML Roads

From satellite imagery to predicted features.

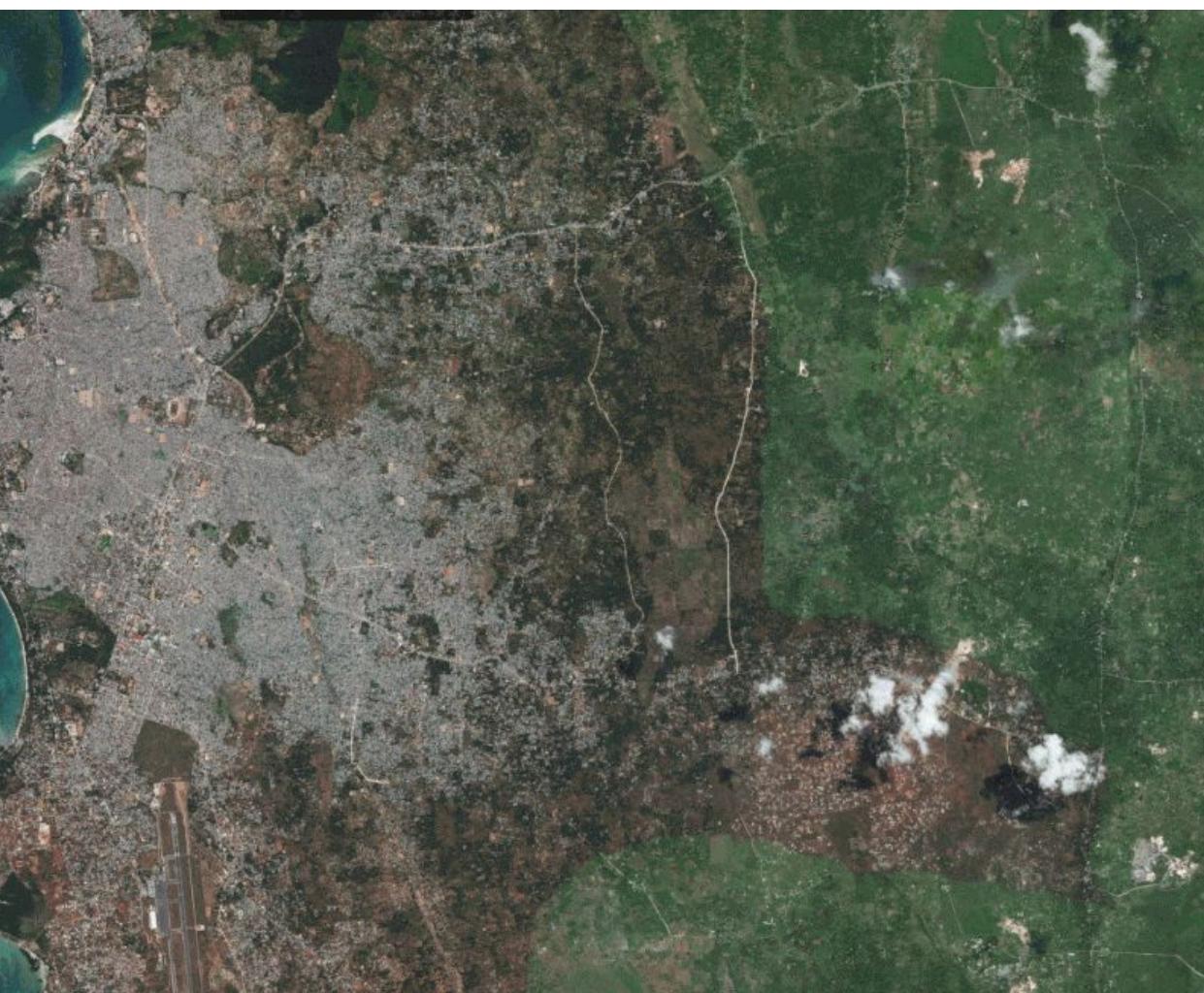
Browse the map. The magenta layer you're seeing here is a map overlay created from artificial intelligence, converting pixels of satellite map data into predicted features, like the roads shown here.

2D

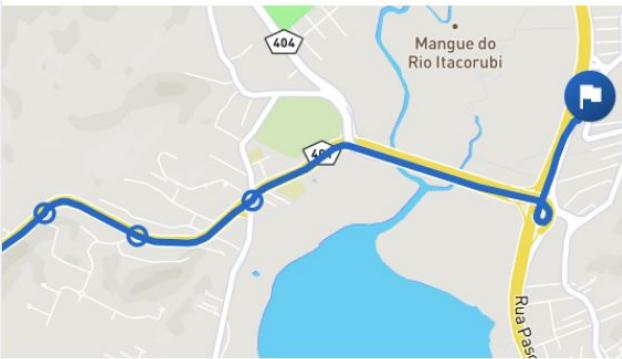
Opacity: 100%

RapiD Editing

Maxar Terms & Feedback



Beautiful Maps



Displays stations or your entire trip on a map and always knows where you are to not miss where to get off the bus.

Routing & Directions

in 2min

15:28 Berlin Hbf

+2



0:16

15:46 Kottbusser Tor (U)

in 2min

15:30 Berlin Hbf



0:25

15:46 Kottbusser Tor (U)

Just tell Transportr where you want to go! It will find the best connections for you, advises you where to change buses, and even gives you an estimated time of arrival.

Live Departures

now



15:30 ➤ Flughafen Tegel Airport

now



15:28 ➤ Berlin Ostbahnhof (S)

+2

15

now

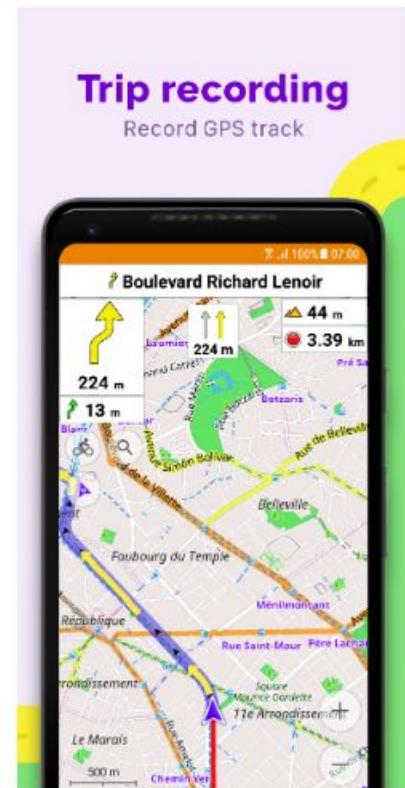
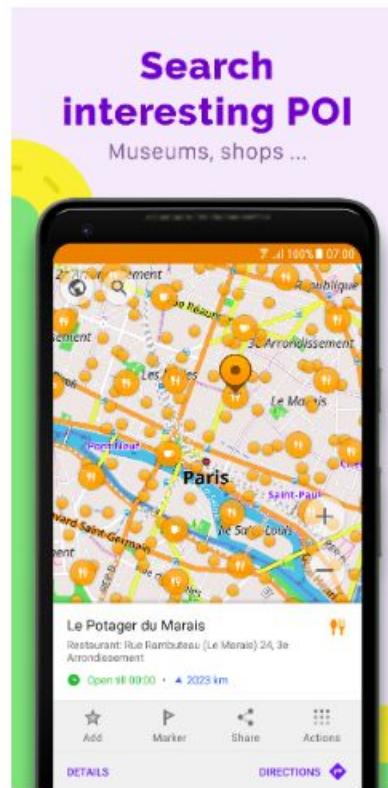
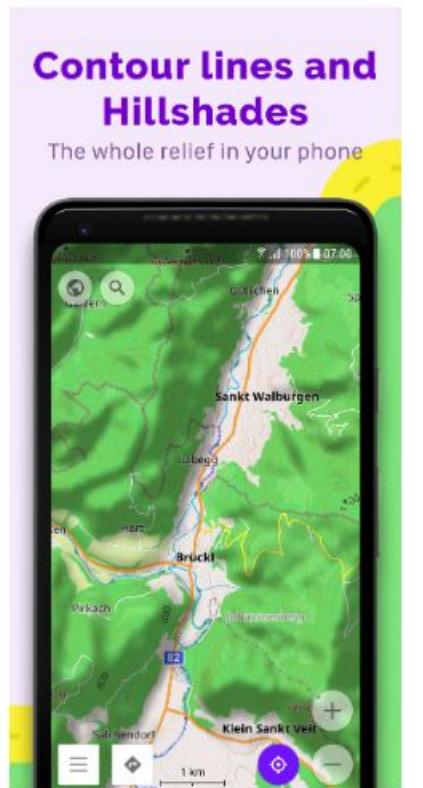
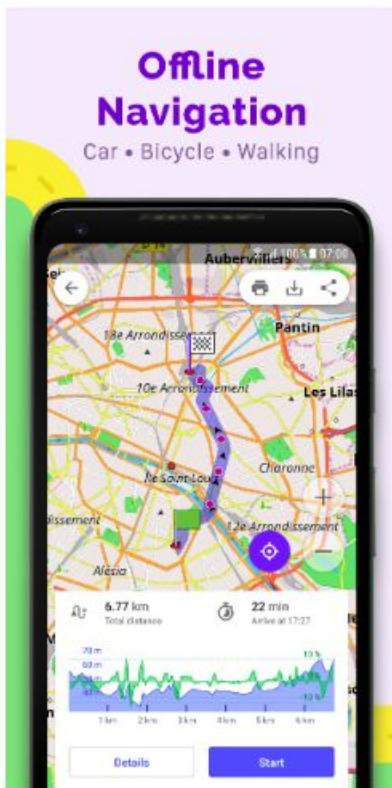


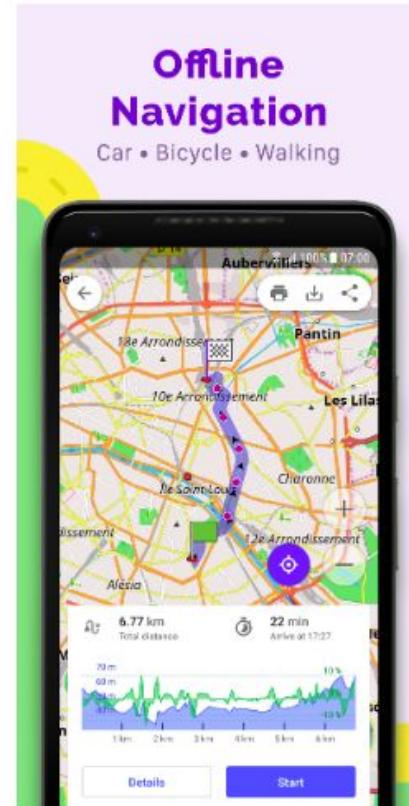
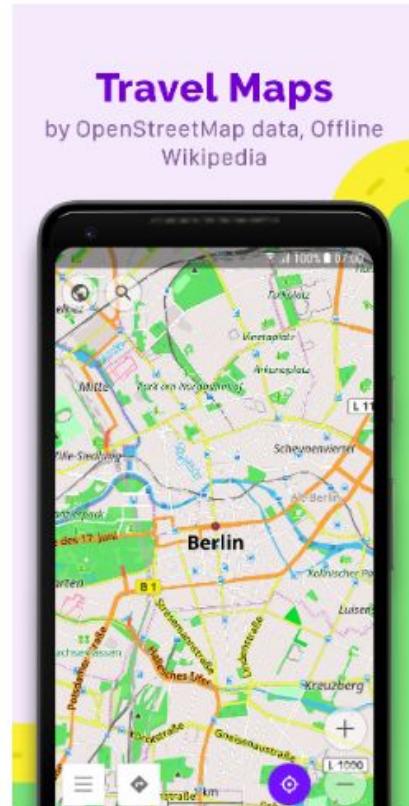
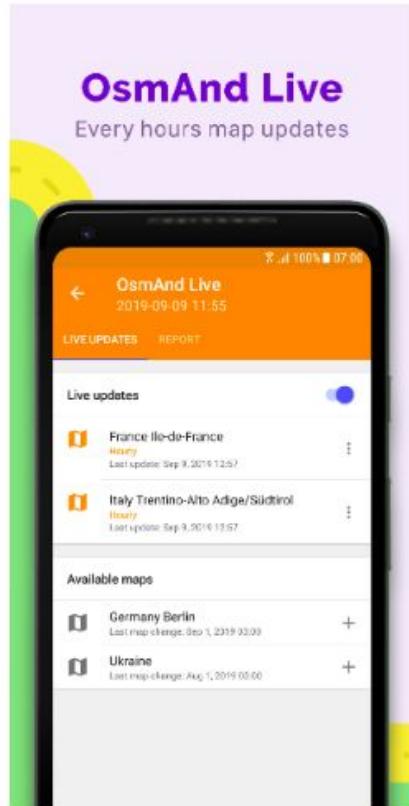
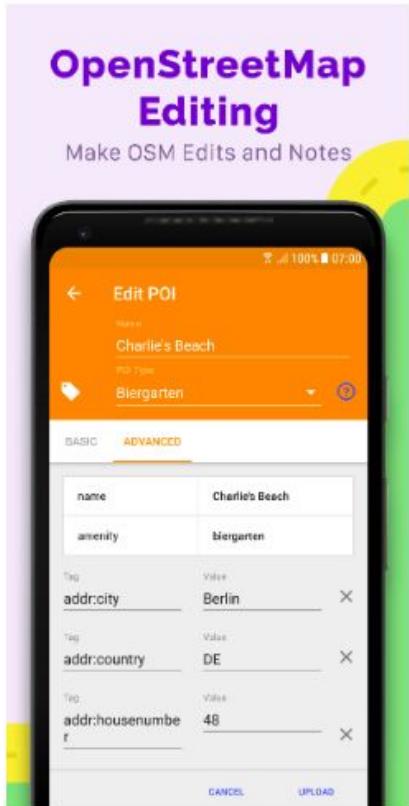
15:30 ➤ Halberstadt

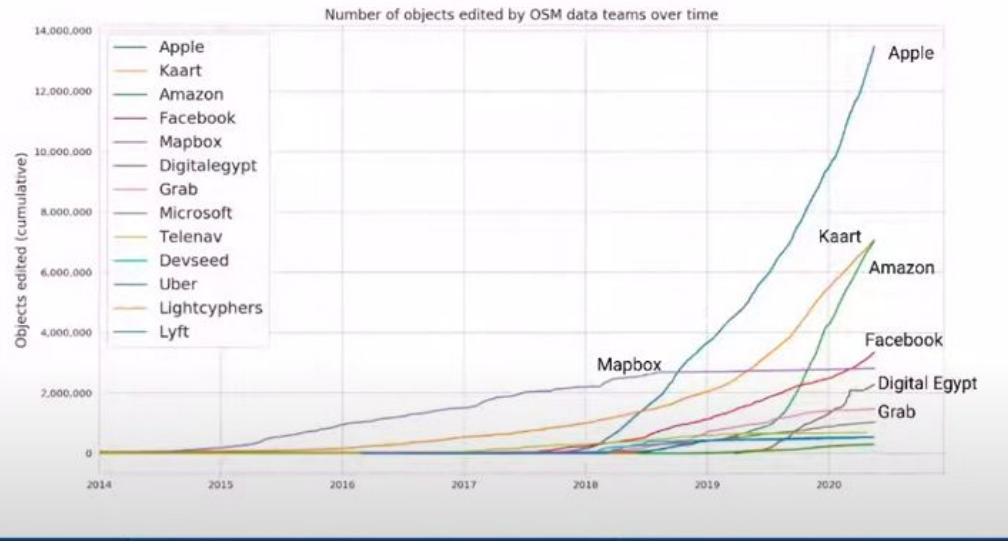
14

Finds your Position









Anderson et. al (2019) Anderson, J.; Sarkar, D.; Palen, L.
Corporate Editors in the Evolving Landscape of
OpenStreetMap. ISPRS Int. J. Geo-Inf. 2019, 8, 232.

master 3 branches 0 tags Go to file Code

awisemanapple Update README.md 6614844 on 8 Jun 14 commits

BUILDINGS.md updating username 2 years ago

README.md Update README.md 4 months ago

README.md

Apple Data Projects

Information about:

- Building Footprint [Data](#) that Apple is sharing.
- Data Improvement [Projects](#) being worked on by the Apple [Data Team](#). Our team uses the hashtag #adt (for Apple Data Team) for our edits.
- A [JOSM Paint Style](#) we created for easier editing, visualization and data validation.
- [Atlas](#), a tool Apple created for querying, visualizing, and storing OpenStreetMap data.
- [MapRoulette](#) challenges created using [Atlas](#).

Additional Information

For more information please contact our community project lead [Andrew Wiseman](#).

 Kaart
Grand Junction, CO <http://kaart.com>

Repositories 41 Packages People 3 Projects 1



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Type: All Language: All

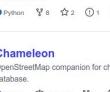
josm-mapillary-plugin
Forked from [mapillary/josm-mapillary-plugin](#)
the Mapillary plugin for the JOSM OpenStreetMap editor

Java 13 Stars 2 Updated 16 hours ago



KaartValidator
Kaart Validator

Python 8 Stars 2 Updated 4 days ago



Chameleon
OpenStreetMap companion for checking and understanding changes in OSM database.

Python GPL-3.0 8 Stars 1 Updated 8 days ago



JOSM_MapWithAI_plugin

Python 4 Stars 1 Updated 11 days ago

Investigación



Artículos

Aproximadamente 52,300 resultados (0.06 s)

Mi perfil

Mi biblioteca

Cualquier momento

Desde 2019

Desde 2019

Desde 2016

Intervalo específico...

Ordenar por relevancia

Ordenar por fecha

Cualquier idioma

Buscar sólo páginas en español

 Incluir patentes Incluir citas Crear alerta**Openstreetmap: User-generated street maps**

M Haklay, P Weber - IEEE Pervasive Computing, 2008 - ieeexplore.ieee.org

The **OpenStreetMap** project is a knowledge collective that provides user-generated street maps. OSM follows the peer production model that created Wikipedia; its aim is to create a set of map data that's free to use, editable, and licensed under new copyright schemes. A ...

99 Citado por 2305 Artículos relacionados Las 13 versiones

[PDF] ucl.ac.uk

[LIBRO] OpenStreetMap

J Bennett - 2010 - books.google.com

This book introduces the OSM project, its aims and objectives, and its history, then guides you through the process of gathering, editing, and using OpenStreetMap data using a series of real-world examples. This book is the perfect aid for geographic-information professionals ...

99 Citado por 161 Artículos relacionados ►

Quality assessment of the French OpenStreetMap dataset

JF Girres, G Touya - Transactions in GIS, 2010 - Wiley Online Library

Abstract The concept of Volunteered Geographic Information (VGI) has recently emerged from the new Web 2.0 technologies. The **OpenStreetMap** project is currently the most significant example of a system based on VGI. It aims at producing free vector geographic ...

99 Citado por 641 Artículos relacionados Las 6 versiones

[PDF] archives-ouvertes.fr

Towards quality metrics for OpenStreetMap

P Mooney, P Corcoran, AC Winstanley - Proceedings of the 18th ..., 2010 - dl.acm.org

ABSTRACT Volunteered Geographic Information (VGI) is currently a "hot topic" in the GIS community. The **OpenStreetMap** (OSM) project is one of the most popular and well supported examples of VGI. Traditional measures of spatial data quality are often not ...

99 Citado por 215 Artículos relacionados Las 12 versiones

[PDF] maynoothuniversity.ie

Búsquedas relacionadas

openstreetmap map

openstreetmap data quality

openstreetmap osm

openstreetmap gps

openstreetmap routing

openstreetmap volunteered geographic

openstreetmap accuracy

information

openstreetmap road network

Real-time routing with OpenStreetMap data

D Luxen, C Vetter - Proceedings of the 19th ACM SIGSPATIAL ..., 2011 - dl.acm.org

Routing services on the web and on hand-held devices have become ubiquitous in the past couple of years. Websites like Bing or Google Maps allow users to find routes between arbitrary locations comfortably in no time. Likewise onboard navigation units belong to the ...

99 Citado por 260 Artículos relacionados Las 4 versiones

How good is volunteered geographical information? A comparative study of

[PDF] kfrichter.ora

Human Assisted Artificial Intelligence Based Technique to Create Natural Features for OpenStreetMap

Piyush Yadav

NUI Galway
Ireland

Dipto Sarkar

Carleton University
Canada

Shailesh Deshpande

TCS Research
India

Edward Curry

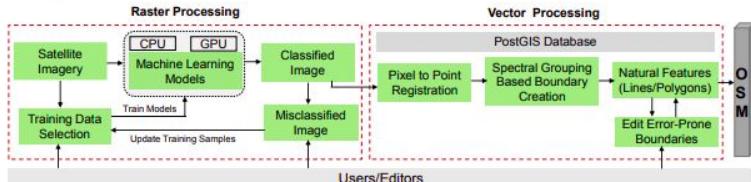
NUI Galway
Ireland

Introduction

OpenStreetMap (OSM) is arguably the largest crowdsourced geographic databases with more than one million contributors [1]. The ongoing contributions make OSM an ever-evolving spatial dataset with the improving quantity, quality, and coverage of data across all types of map features. While OSM has stood up to various tests of data quality and accuracy with regards to a variety of manmade features (e.g. building, roads), data completeness of high-level natural feature classes like vegetation (grass, forest), impervious surface (industrial regions) and water (lakes, river, delta) is relatively sparse. This is partly because OSM data creation tools (e.g. JOSM) provide an intuitive interface to digitize smaller features, such as building and road segments, but is cumbersome for natural features (e.g. delta, scree, geological regions) which are quite complex and are spread over larger regions.

Recently, Facebook presented RapiD editor¹ which uses Artificial Intelligence (AI) techniques to generate features for faster map editing. RapiD autodetects roads features from high-resolution satellite imagery which are then curated by users to create the final dataset. The RapiD program has certain limitations: for example, discovering linear features like road is easier as compared to natural elements (such as delta and forest) which are uneven [2]. Secondly, most of the high-resolution imagery is still not freely available which contradicts the preamble of the open-source community. In this work, we propose an AI-based technique using freely available satellite images like Landsat and Sentinel to create natural features over OSM in congruence with human editors acting as initiators and validators. The method is based on Interactive Machine Learning [3] technique where human inputs are coupled with the machine to solve complex problems efficiently as compare to pure autonomous process. We use a bottom-up approach where a machine learning (ML) pipeline in loop with editors is used to extract classes using spectral signatures of images and later convert them to editable features to create natural features.

Proposed Approach



Exploring OpenStreetMap Availability for Driving Environment Understanding

Yang Zheng, Izzat H. Izzat, and John H.L. Hansen, *Fellow, IEEE*

Abstract — With the great achievement of artificial intelligence, vehicle technologies have advanced significantly from human centric driving towards fully automated driving. An intelligent vehicle should be able to understand the driver's perception of the environment as well as controlling behavior of the vehicle. Since high digital map information has been available to provide rich environmental context about static roads, buildings and traffic infrastructures, it would be worthwhile to explore map data capability for driving task understanding. Alternative to commercial used maps, the OpenStreetMap (OSM) data is a free open dataset, which makes it unique for the exploration research. This study is focused on two tasks that leverage OSM for driving environment understanding. First, driving scenario attributes are retrieved from OSM elements, which are combined with vehicle dynamic signals for the driving event recognition. Utilizing steering angle changes and based on a Bi-directional Recurrent Neural Network (Bi-RNN), a driving sequence is segmented and classified as lane-keeping, lane-change-left, lane-change-right, turn-left, and turn-right events. Second, for autonomous driving perception, OSM data can be used to render virtual street views, representation prior knowledge to facilitate vision-based systems for road semantic segmentation. Five different types of road masks are generated from OSM, image, and Lidar points, and fused to characterize the drivable space from the driver's perspective. An alternative data-driven approach is based on a Fully Convolutional Neural Network (FCNN), OSM availability for deep learning methods are discussed to reveal potential usage on

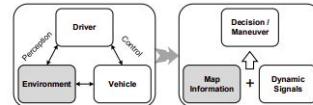


Fig. 1. Use map data to retrieve environment information, and combine with vehicle dynamic signals to understand driver behavior.

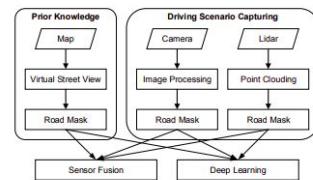


Fig. 2. Use map data to obtain prior road mask, and fuse with image and Lidar data for road semantic segmentation

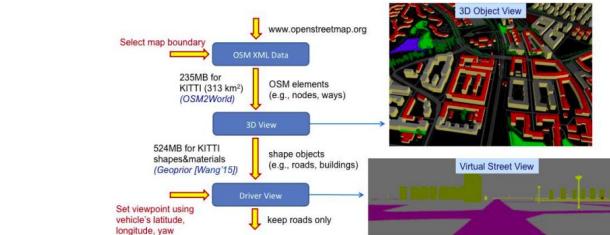


Fig. 5. Rendering virtual street view from OSM, with approach flow diagram and output example.



Fig. 6. The effect of overlaying the OSM road mask (displayed in red color) onto the real camera image. (a) good alignment and (b) bad alignment.

dynamic features and environment attributes, and their word contextual representation outputs will correspond with our frames (i.e., 70 second) as the maximum sequence length with zero padding. The input vector dimension is 25, and the

The Gendered Geography of Contributions to OpenStreetMap: Complexities in Self-Focus Bias

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ABSTRACT

Millions of people worldwide contribute content to peer production repositories that serve human information needs and provide vital world knowledge to prominent artificial intelligence systems. Yet, extreme gender *participation disparities* exist in which men significantly outnumber women. A central concern has been that due to self-focus bias [46], these disparities can lead to corresponding gender *content disparities*, in which content of interest to men is better represented than content of interest to women. This paper investigates the relationship between participation and content disparities in OpenStreetMap. We replicate findings that women are dramatically under-represented as OSM contributors, and observe that men and women contribute different types of content and do so about different places. However, the character of these differences confound simple narratives about self-focus bias: we find that on a proportional basis, men produced a higher proportion of contributions in *feminized* spaces compared to women, while women produced a higher proportion of contributions in *masculinized* spaces compared to men. We discuss the implications of these complex results for both theory and practice.

CCS CONCEPTS

- Human-centered computing → Empirical studies in collaborative and social computing: Empirical studies in

KEYWORDS

Peer production, gender, OpenStreetMap, self-focus bias, urban, rural

ACM Reference Format:

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1 INTRODUCTION

Peer production is a powerful example of the potential of social computing in which communities like Wikipedia and OpenStreetMap (OSM)—the ‘Wikimedia of Maps’ [32, 73]—create high-quality content at previously unimaginable scales. This content has in turn satisfied billions of human information needs [26, 55, 76] and provided essential world knowledge to countless artificial intelligence systems [38, 45, 71].

Despite the many accomplishments of the peer production model, social computing researchers have also identified structural challenges that may be preventing peer production from reaching an even higher potential. One of the most serious arises from the demographic configurations of peer production communities. High-impact peer production communities tend to have major *participation disparities* with

Table 1: Male and Female Edits in Different Types of Regions

(a) Urban-Rural Divide (%pop-urban)		
County Type	Female Edits	Male Edits
Most Rural	41,382 (1.87%)	2,593,746 (7.37%)
Most Urban	2,169,078 (98.13%)	32,583,189 (92.63%)
$\chi^2 = 96076, p < 0.0001$		
(c) Racial/Ethnic Diversity (%WnHL)		
County Type	Female Edits	Male Edits
Least diverse	71,144 (3.67%)	2,875,634 (12.59%)
Most diverse	1,868,002 (96.33%)	19,956,337 (87.41%)
$\chi^2 = 135868, p < 0.0001$		
(b) Urban-Rural Divide (<i>continuum code</i>)		
County Type	Female Edits	Male Edits
Most Rural	21,743 (1.03%)	1,878,232 (5.86%)
Most Urban	2,097,586 (98.97%)	30,160,817 (94.14%)
$\chi^2 = 88517, p < 0.0001$		
(d) Socio-Economic Status (MHI)		
County Type	Female Edits	Male Edits
Poorest	428,784 (18.66%)	2,934,839 (10.25%)
Wealthiest	1,869,162 (81.34%)	25,710,048 (89.75%)
$\chi^2 = 155434, p < 0.0001$		

exhibit a substantial decrease of 73% in rural edits (a shortfall of 114,415 edits) relative to what would be expected if there were no difference in the proportion of edits produced by gender. Similar magnitudes exist for female edits in rural counties based on *rural-urban continuum* (82%) and in the least diverse counties (69%); and a similarly large increase exists in the poorest counties (+72%).

Another way to look at the data is from a *contributor-centric* perspective to understand the editing patterns of a typical male or female editor in our sample. We found that males are less likely to contribute to urban regions vs. rural regions than their female counterparts (for the interaction, Wald $\chi^2 = 7.92, p = 0.0049$ in terms of %pop-urban and Wald $\chi^2 = 11.31, p = 0.0008$ in terms of *rural-urban continuum code*). These are large effects as indicated by the incidence rate ratio values [77]: For %pop-urban, a male editor produces only 0.81 times what a female produces in urban regions, but produces 4.17 times that in rural regions, 95% CI [1.56, 11.14]. (For *rural-urban continuum* these values are 0.78, 6.01 and 95% CI [2.14, 16.90], respectively).

In regards to racial/ethnic diversity, men concentrate a lower proportion of their edits in the most diverse counties

and ethnic diversity and poorer areas (contribution-centric only) compared to their male counterparts, with women likely counteracting a bias that has been observed in OSM. However, the reverse is true in the case of the urban/rural spectrum. Of course, interpreting these intersectional results is complex and must be done with caution - a point we return to in the discussion section.

Edits Made with Bots. The above statistics describe the results for our *no-bots* dataset. Examining the results for our *with-bots* dataset, we see similar patterns but at different quantitative scales. For example, the number of counties with female edits in the *with-bots* dataset (1,469) increases by 61% in comparison to the *no-bots* dataset. At the same time, however, the number of counties with a higher ratio of female edits to male edits in the *with-bots* dataset is reduced from 72 (in the *no-bots* dataset) to 9. Furthermore, male editors produced a higher proportion of bot-based contributions than female editors: the number of edits by men in the *with-bots* dataset is 9.51 times as high as in the *no-bots* dataset, while for women it is only 3.55 times as high. Together these results suggest that the male influence on OSM

Using OpenStreetMap Data and Machine Learning to Generate Socio-Economic Indicators

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Abstract: Socio-economic indicators are key to understanding societal challenges. They disassemble complex phenomena to gain insights and deepen understanding. Specific subsets of indicators have been developed to describe sustainability, human development, vulnerability, risk, resilience and climate change adaptation. Nonetheless, insufficient quality and availability of data often limit their explanatory power. Spatial and temporal resolution are often not at a scale appropriate for monitoring. Socio-economic indicators are mostly provided by governmental institutions and are therefore limited to administrative boundaries. Furthermore, different methodological computation approaches for the same indicator impair comparability between countries and regions. OpenStreetMap (OSM) provides an unparalleled standardized global database with a high spatiotemporal resolution. Surprisingly, the potential of OSM seems largely unexplored in this context. In this study, we used machine learning to predict four exemplary socio-economic indicators for municipalities based on OSM. By comparing the predictive power of neural networks to statistical regression models, we evaluated the unhinged resources of OSM for indicator development. OSM provides prospects for monitoring across administrative boundaries, interdisciplinary topics, and semi-quantitative factors like social cohesion. Further research is still required to, for example, determine the impact of regional and international differences in user contributions on the outputs. Nonetheless, this database can provide meaningful insight into otherwise unknown spatial differences in social, environmental or economic inequalities.

Keywords: indicators; machine learning; OpenStreetMap; vulnerability; resilience; climate

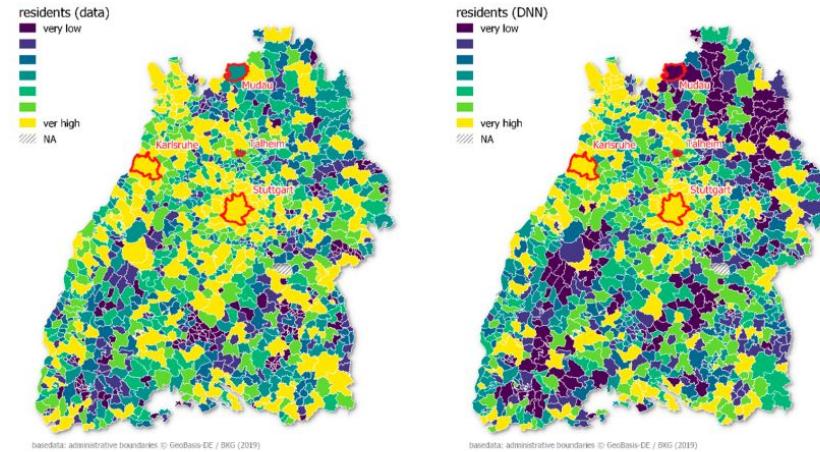


Figure 3. Map showing the normalized resident values (left) and predicted values (right) of the municipalities in Baden-Württemberg.

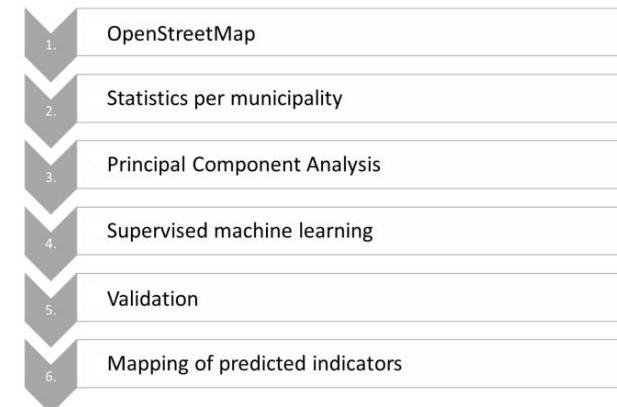


Figure 1. Overall workflow of the analysis conducted.

Educación

Geographisches Institut >

Forschungsprojekt

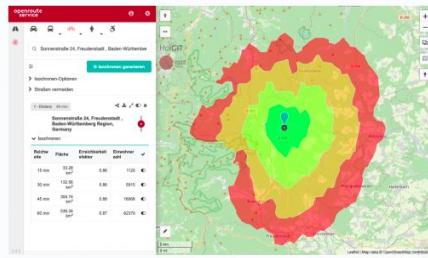
OpenStreetMap 3D Germany

The user-generated geodata of OpenStreetMap (OSM) and the elevation data of the Shuttle Topography Mission (SRTM) are used for developing an open standard based 3D Geodata Infrastructure (GDI-3D) for entire Germany. A Web 3D Service (W3DS) is providing the processed data as a 3D scene graph to the client. The OpenStreetMap-3D project aims to investigate the following aspects:

- Use potential and quality of user-generated geodata
- Scalability of concepts and services developed in GDI-3D.de
- Integration of user-generated data into interoperable geodata-/geoservice infrastructures based on open standards
- Prototypical development of statewide GDI-3D (best practices)
- Interoperable platform for 3D city models
- Evaluation of cartographic visualisations in 3D



Openrouteservice planning tools:



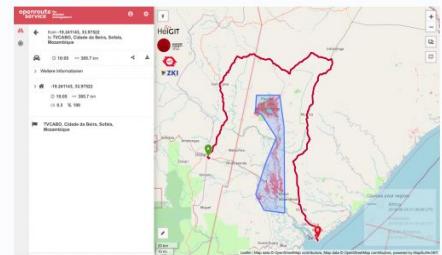
Classic maps client

Our [classic route planning tool](#) enables you to use most of the openrouteservice API with only a few clicks on a map. Choose from a variety of profiles and set up to 50 waypoints to plan your route. Customize it by avoiding areas, specific street types or whole countries. Query POIs along your route, perform accessibility analyses for multiple points or simply inspect locations.

These and many more amazing features are offered free of charge and in different languages. But the best thing about this: It's [open source](#), so with a little bit of JavaScript knowledge you can easily adjust the client to your personal use case.

Disaster maps client

Based on the classic version, our client for disaster management is developed to support the work of humanitarian actors and disaster responders in the most vulnerable and disaster prone regions of the world. Thanks to the work of the Humanitarian OpenStreetMap Team and the Missing Maps project, in disaster situations the OSM data is continually updated and enriched with critical information. By limiting the service to active disaster regions, it is possible to recalculate the routing graph once every hour on basis of the most current OSM data.



New VueJs client



July 4, 2020 (v1) Book Open Access

Proceedings of the Academic Track at the State of the Map 2020

Minghini, Marco; Coetzee, Serena; Juhász, Levente; Yeboah, Godwin; Mooney, Peter; Grinberger, A. Yair; Proceedings of the Academic Track at State of the Map 2020 - Online (originally planned in Cape Town, South Africa), July 4-6, 2020. Editors Marco Minghini - European Commission, Joint Research Centre (JRC), Ispra, Italy Serena Coetzee, Department of Geography, Geo!

Uploaded on July 3, 2020

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July 4, 2020 (v1) Conference paper Open Access

Editorial: OpenStreetMap research in the COVID-19 era

Minghini, Marco; Coetzee, Serena; Grinberger, A. Yair; Yeboah, Godwin; Juhász, Levente; Mooney, Peter;

Minghini, M., Coetzee, S., Grinberger, A. Y., Yeboah, G., Juhász, L., & Mooney, P. (2020). Editorial: OpenStreetMap research in the COVID-19 era In: Minghini, M., Coetzee, S., Juhász, L., Yeboah, G., Mooney, P., Grinberger, A.Y. (Eds.). Proceedings of the Academic Track at the State of the Map 2020 Online

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Assessing global OpenStreetMap building completeness to generate large-scale 3D city models

Biljecki, Filip; Ang, Li Min;

Biljecki, F. & Ang, M. L. (2020) Assessing Global OpenStreetMap building completeness to generate large-scale 3D city models In: Minghini, M., Coetzee, S., Juhász, L., Yeboah, G., Mooney, P., Grinberger, A.Y. (Eds.). Proceedings of the Academic Track at the State of the Map 2020 Online

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Proceedings of the Academic Track at the State of the Map 2020

This volume contains the abstracts of the Academic Track at the State of the Map 2019 that was on July 4-5, 2020 online (originally planned in Cape Town, South Africa).

Editors:

Minghini, M.¹; Coetzee, S.²; Juhász, L.³; Yeboah, G.⁴; Mooney, P.⁵; Grinberger, A.Y.⁶

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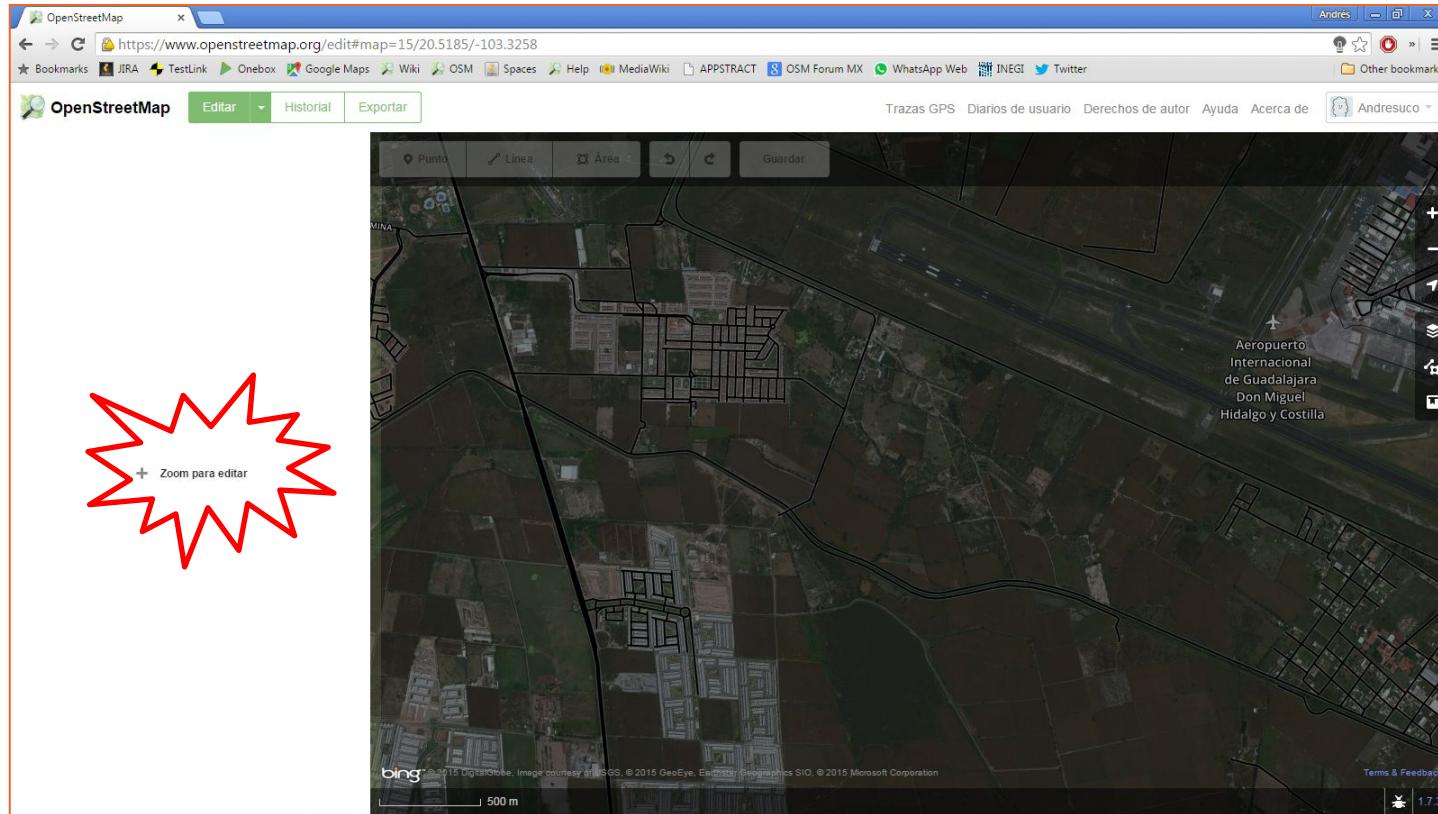
⁵ Maynooth University, Ireland

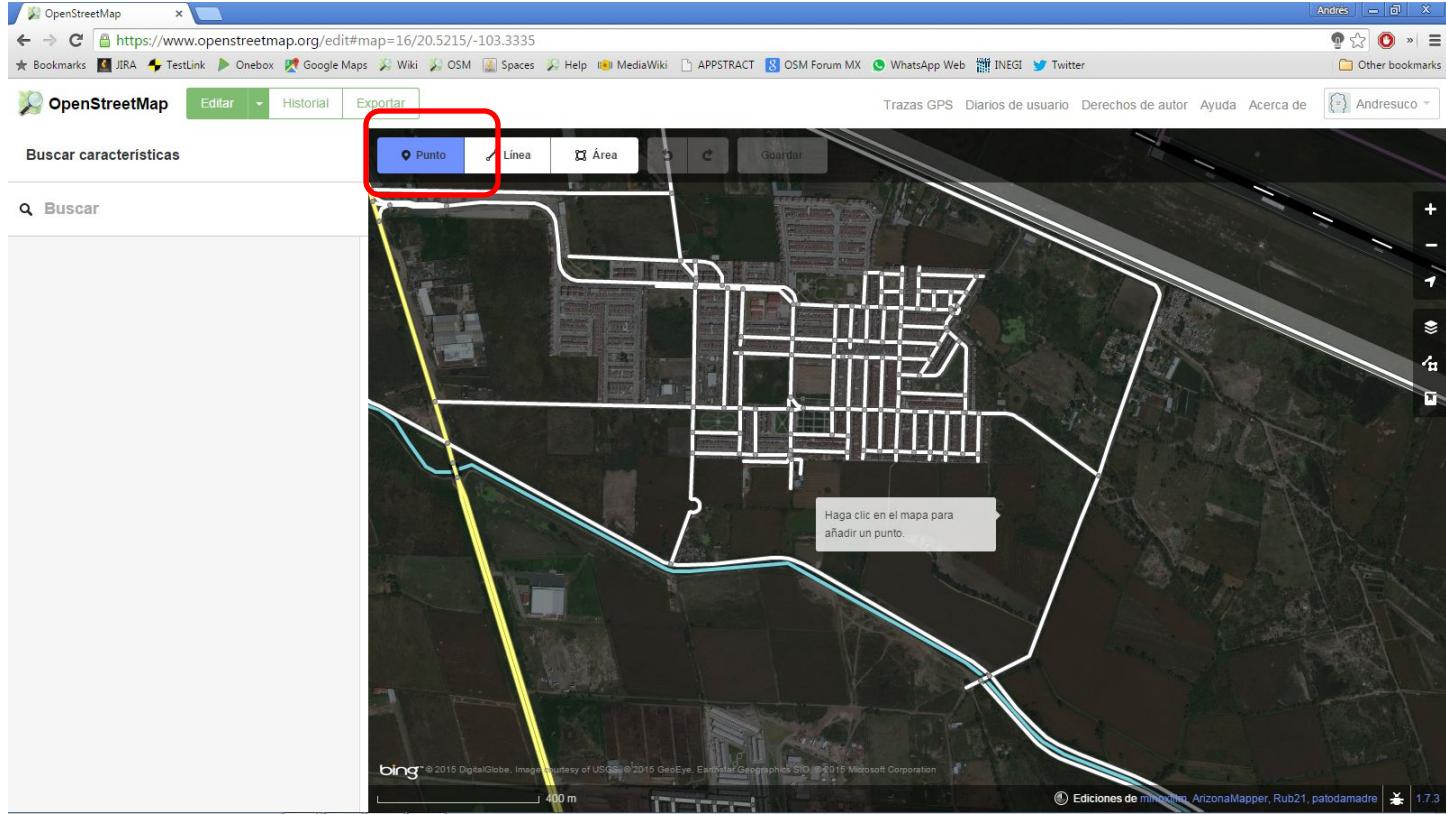
⁶ The Hebrew University of Jerusalem, Israel



¿Cómo Contribuir?

The screenshot shows the OpenStreetMap editing interface. At the top, there's a browser bar with the URL <https://www.openstreetmap.org/edit#map=16/20.5247/-103.3365>. Below it is a navigation bar with links like Bookmarks, JIRA, TestLink, Onebox, Google Maps, Wiki, OSM, Spaces, Help, MediaWiki, APPSTRACT, OSM Forum MX, WhatsApp Web, INEGI, Twitter, and Other bookmarks. The main area has tabs for OpenStreetMap, Editar, Historial, and Exportar. On the left, a sidebar titled "Selecciona tipo de elemento" lists options: Camino, Ferrocarril, Sendero, Curso de agua, Línea de alta tensión, and Linea. The central part of the screen displays a satellite map of a residential neighborhood. A new road is being drawn, indicated by a white line and a red highlight. A toolbar at the top of the map area includes icons for Punto, Línea, Área, and Guardar, along with a counter showing 2. The bottom of the map shows a scale bar from 0 to 200 meters and a copyright notice: "bing © 2015 DigitalGlobe. Image courtesy of USGS, © 2015 GeoEye, Earthstar Graphics SIO, © 2015 Microsoft Corporation". At the bottom right, there's a footer with the text "Ediciones de minoxfilm, Rub21, patodamadre" and a page number "1 / 3".





OpenStreetMap <https://www.openstreetmap.org/edit#map=16/20.5218/-103.3305>

Andrés

Bookmarks JIRA TestLink Onebox Google Maps Wiki OSM Spaces Help MediaWiki APPSTRACT OSM Forum MX WhatsApp Web INEGI Twitter Other bookmarks

OpenStreetMap Editar Historial Exportar Trazas GPS Diarios de usuario Derechos de autor Ayuda Acerca de Andrésuco

Selecciona tipo de elemento

Punto Línea Área Guardar 1

Buscar

Parque

Terreno Hospital

Lugar de culto

Cafetería

Restaurante

Comida rápida

Bar

Banco

bing © 2015 DigitalGlobe, Image courtesy of USGS, © 2015 GeoEye, Esri, Maptia, Geodaten SIO, © 2015 Microsoft Corporation. Ediciones de minofilm, ArizonaMapper, Rub21, patodamadre 173

The screenshot shows the OpenStreetMap editing interface. On the left, there's a sidebar titled 'Selecciona tipo de elemento' with a search bar labeled 'Buscar'. Below the search bar is a list of categories: Parque, Terreno Hospital, Lugar de culto, Cafetería, Restaurante, Comida rápida, Bar, and Banco. Each category has a small icon next to it. On the right, the main map view shows a satellite-style map of a residential neighborhood. A red box highlights a specific location on a street. The map includes white line drawings of streets and buildings. At the bottom of the map, there's a copyright notice from Bing and some credits for data sources. The top of the screen shows the browser's address bar with the URL and various tabs, and the OpenStreetMap navigation bar with options like 'Editar', 'Historial', 'Exportar', and 'Guarda'.

OpenStreetMap Andrés

https://www.openstreetmap.org/edit#map=16/20.5218/-103.3305

Bookmarks JIRA TestLink Onebox Google Maps Wiki OSM Spaces Help MediaWiki APPSTRACT OSM Forum MX WhatsApp Web INEGI Twitter Other bookmarks

OpenStreetMap Editar Historial Exportar Trazas GPS Diarios de usuario Derechos de autor Ayuda Acerca de Andresuco

Selecciona tipo de elemento

Buscar Parque

Terreno Hospital Lugar de culto Cafeteria Restaurante Comida rápida Bar Banco

Punto Linea Área Guardar 1

Selección en mapa

bing ©2015 DigitalGlobe. Image courtesy of USGS. ©2015 GeoEye. Esri, Esri and the Esri globe logo, Esri, Inc., Microsoft and Microsoft ArcGIS are either registered trademarks or trademarks of Esri and/or Microsoft Corporation in the United States and/or other countries. All other marks and trade names are the property of their respective owners.

400 m Ediciones de minoxfilm, ArizonaMapper, Rub21, patbmadre 173

The screenshot shows the OpenStreetMap editing interface. On the left, a sidebar titled "Selecciona tipo de elemento" lists various place types: Parque, Terreno Hospital, Lugar de culto, Cafeteria, Restaurante, Comida rápida, Bar, and Banco. The "Parque" option is highlighted with a red rectangle. The main area is a satellite map of a residential neighborhood with a park highlighted in blue. A red pin marks a specific location within the park area. The top navigation bar includes links for "Historial" and "Exportar". The bottom right corner shows a list of editors who have made changes to the map.

OpenStreetMap

https://www.openstreetmap.org/edit#map=16/20.5218/-103.3305

Bookmarks: JIRA, TestLink, Onebox, Google Maps, Wiki, OSM, Spaces, Help, MediaWiki, APPSTRACT, OSM Forum MX, WhatsApp Web, INEGI, Twitter, Other bookmarks

Andrés

OpenStreetMap Editar Historial Exportar Trazas GPS Diarios de usuario Derechos de autor Ayuda Acerca de Andrésuco

Editar elemento

Parque

Nombre
Nombre común (si existe)

Añadir campo: Dirección, Altitud, Nota...

Todas las etiquetas (1)

Todas las relaciones (0)

+

Punto Línea Área Guardar 1

bing © 2015 DigitalGlobe. Image courtesy of USGS. © 2015 GeoEye. Earthstar Geographics SIO. © 2015 Microsoft Corporation. 400 m

Ediciones de minoxilm, ArizonaMapper, Rub21, patodamadre 173

The screenshot shows the OpenStreetMap editing interface. On the left, a modal window titled 'Editar elemento' is open, specifically for a 'Parque' (Park) feature. The modal contains fields for 'Nombre' (Name) and 'Añadir campo' (Add field), along with buttons for 'Todas las etiquetas' (All tags) and 'Todas las relaciones' (All relations). A red box highlights this modal. To the right of the modal is a satellite map of a residential area with a park. The park is outlined in white and has a red location pin on it. The map also shows roads, buildings, and agricultural fields. At the bottom of the map, there is a copyright notice from Bing and a scale bar indicating 400 meters. The overall interface includes a top navigation bar with links like 'Historial', 'Exportar', 'Trazas GPS', and 'Ayuda'. The main menu at the top says 'OpenStreetMap' and 'Andrés'.

OpenStreetMap

https://www.openstreetmap.org/edit#map=16/20.5215/-103.3335

Bookmarks JIRA TestLink Onebox Google Maps Wiki OSM Spaces Help MediaWiki APPSTRACT OSM Forum MX WhatsApp Web INEGI Twitter Other bookmarks

Andrés

OpenStreetMap Editar Historial Exportar Trazas GPS Diarios de usuario Derechos de autor Ayuda Acerca de Andresuco

Editar elemento

Parque

Nombre Parque fulanito

Añadir campo: Dirección, Altitud, Nota...

Todas las etiquetas (2)

leisure park

name Parque fulanito

Todas las relaciones (0)

Guardar

Punto Línea Área

Parque fulanito

bing © 2015 DigitalGlobe, Image courtesy of USGS, © 2015 GeoEye, Earthstar Geographics SIO, © 2015 Microsoft Corporation

200 m

Ediciones de minoxfilm, ArizonaMapper, Rub21, paludamadre

17.3

The screenshot shows the OpenStreetMap editor interface. On the left, a modal window titled 'Editar elemento' (Edit element) is open for a 'Parque' (Park) object. The 'Nombre' (Name) field contains 'Parque fulanito'. Below it, under 'Todas las etiquetas (2)', are two tags: 'leisure:park' and 'name:Parque fulanito'. At the bottom of the modal is a 'Guardar' (Save) button. The main map area on the right shows a satellite view of a residential neighborhood. A new node has been added to the map at the location of the park, and it is highlighted with a red box. The node is labeled 'Parque fulanito'. The map includes a scale bar indicating 200 meters and a copyright notice for Bing imagery.

OpenStreetMap <https://www.openstreetmap.org/edit#map=16/20.5215/-103.3335>

Bookmarks JIRA TestLink Onebox Google Maps Wiki OSM Spaces Help MediaWiki APPSTRACT OSM Forum MX WhatsApp Web INEGI Twitter Other bookmarks Andrés

OpenStreetMap Editar Historial Exportar Trazas GPS Diarios de usuario Derechos de autor Ayuda Acerca de Andrés

Editar elemento

Parque

Nombre Parque fulanito

Añadir campo: Dirección, Altitud, Nota...

Todas las etiquetas (2)

leisure	park
name	Parque fulanito

Todas las relaciones (0)

Guardado 1

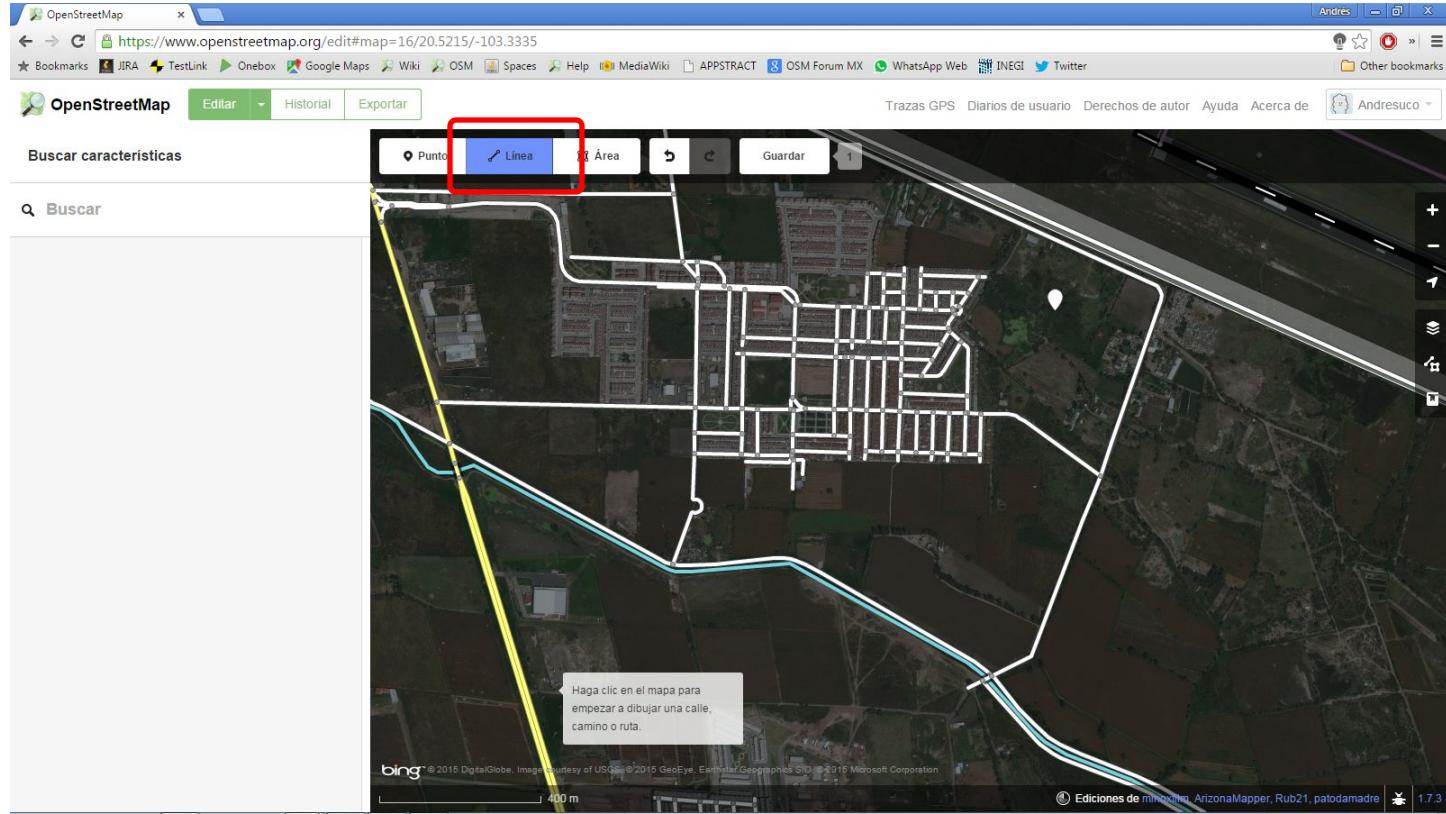
Parque fulanito

bing © 2015 DigitalGlobe, Image courtesy of USGS, © 2015 GeoEye, Earthstar Geographics SIO, © 2015 Microsoft Corporation

200 m

Ediciones de minoxlim, ArizonaMapper, Rub21, patodamadre 1.7.3

The screenshot shows the OpenStreetMap editor interface. On the left, there's a sidebar for editing a 'Parque' (Park) object. It includes fields for 'Nombre' (Name) set to 'Parque fulanito', and a 'Guardado' (Saved) button with a count of 1. Below this are sections for 'Todas las etiquetas (2)' (All tags) and 'Todas las relaciones (0)' (All relations). The main area is a satellite map of a residential area with a park highlighted by a white polygon. A specific point within the park is highlighted with a red square overlay. The bottom of the map displays copyright information from Bing and a scale bar indicating 200 meters.



OpenStreetMap <https://www.openstreetmap.org/edit#map=16/20.5246/-103.3365>

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OpenStreetMap [Editar](#) [Historial](#) [Exportar](#)

Selección tipo de elemento

Buscar

Punto Línea Área Guardar

Camino Ferrocarril Sendero Curso de agua Línea de alta tensión Línea

200 m Ediciones de minofilm, Rub21, patodamade

The screenshot shows the OpenStreetMap editing interface. On the left, a modal window titled "Selección tipo de elemento" (Select element type) is open, listing various element types with icons and labels: Camino (Road), Ferrocarril (Railway), Sendero (Footpath), Curso de agua (Watercourse), Línea de alta tensión (High-voltage line), and Línea (Line). The "Línea" item is highlighted with a red box. Above the map, there is a toolbar with buttons for "Punto" (Point), "Línea" (Line), "Área" (Area), and "Guarda" (Save). The main map area displays a satellite view of a residential neighborhood with a white line network overlaid, representing the edited features. The bottom of the map includes copyright information from Bing and a scale bar indicating 200 meters.

OpenStreetMap

https://www.openstreetmap.org/edit#map=16/20.5247/-103.3365

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Andrés

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Selección tipo de elemento

Punto Línea Área Guardar 4

Buscar

Camino

Calle urbana Autopista Carretera troncal Carretera primaria Carretera secundaria Carretera terciaria Vía de servicio

Guardado

200 m

bing © 2015 DigitalGlobe. Image courtesy of USGS. © 2015 GeoEye, Earthstar Geographics SIO. © 2015 Microsoft Corporation

Ediciones de minoxfilm, Rub21, patodamadre 1/3

The screenshot shows the OpenStreetMap editing interface. On the left, a modal window titled 'Selección tipo de elemento' lists various road types. The 'Calle urbana' option is highlighted with a red box. The main map area shows a satellite view of a residential neighborhood with a white line edit overlay. The bottom of the screen displays copyright information from Bing and a footer with some text.

OpenStreetMap

https://www.openstreetmap.org/edit#map=16/20.5247/-103.3365

Andrés

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Editar elemento

Calle urbana

Nombre
Nombre común (si existe)

Sentido único
Se asume que es No

Límite de velocidad
40, 50, 60... km/h

Estructura
Puente

Acceso
General yes
A pie yes
Automóviles yes
Bicicletas yes

Punto Línea Área Guardar 4

200 m

bing ©2015 DigitalGlobe. Image courtesy of USGS. © 2015 GeoEye, Earthstar Geographics SIO. © 2015 Microsoft Corporation.

Ediciones de minofilm, Rub21, patodamadre 1 / 3

The screenshot shows the OpenStreetMap editing interface. On the left, a modal dialog titled 'Editar elemento' (Edit element) is open for a 'Calle urbana' (Urban street). The 'Nombre' (Name) field is highlighted with a red dashed border. The 'Estructura' (Structure) section includes options like 'Puente' (Bridge), 'Túnel' (Tunnel), 'Dique' (Dam), 'Desmonte' (Excavation), and 'Vado' (Footbridge). The 'Acceso' (Access) section lists 'General' as 'yes' for all categories: 'A pie' (On foot), 'Automóviles' (Cars), and 'Bicicletas' (Bicycles). The main map area shows a satellite view of a residential area with a white line-drawn street network. A legend at the top of the map indicates 'Punto' (Point), 'Línea' (Line), and 'Área' (Area). A 'Guardar' (Save) button is visible above the map. The bottom of the screen displays copyright information from Bing and page navigation links.

OpenStreetMap x https://www.openstreetmap.org/edit#map=17/20.52453/-103.33706 Andrés

Bookmarks JIRA TestLink Onebox Google Maps Wiki OSM Spaces Help MediaWiki APPSTRACT OSM Forum MX WhatsApp Web INEGI Twitter Other bookmarks

OpenStreetMap Editar Historial Exportar Trazas GPS Diarios de usuario Derechos de autor Ayuda Acerca de Andresuco

Editar elemento x

Nombre: Calle Fulanita

Sentido único: Se asume que es No

Límite de velocidad: 40, 50, 60... km/h

Estructura: Puente, Túnel, Dique, Desmonte, Vado

Acceso:

General	yes
A pie	yes
Automóviles	yes
Bicicletas	yes
Caballos	yes

Superficie: asphalt, unpaved, paved

Punto Linea Área Guardar 4

200 m

bing © 2015 DigitalGlobe. Image courtesy of USGS. © 2015 GeoEye. Earthstar Geographics SIO. © 2015 Microsoft Corporation

Ediciones de minoxfilm, Rub21, patodamade 17.3

The screenshot shows the OpenStreetMap editor interface. On the left, there's a modal window titled 'Editar elemento' (Edit element) containing a form with several fields. The 'Nombre' (Name) field is filled with 'Calle Fulanita' and has a red dashed border around it. Below it are other fields: 'Sentido único' (One-way), 'Límite de velocidad' (Speed limit), 'Estructura' (Structure), 'Acceso' (Access), and 'Superficie' (Surface). The main right side of the screen displays a satellite map of a residential neighborhood with a street network. One specific street, 'Calle Fulanita', is highlighted with a red line. The bottom of the map shows a scale bar of 200 meters and a copyright notice from Bing. The top of the screen shows the browser's address bar with the URL 'https://www.openstreetmap.org/edit#map=17/20.52453/-103.33706' and the user 'Andrés'. The top navigation bar includes links for 'Historial' (History), 'Exportar' (Export), 'Trazas GPS' (GPS tracks), 'Diarios de usuario' (User logs), 'Derechos de autor' (Copyright), 'Ayuda' (Help), 'Acerca de' (About), and the user's profile 'Andresuco'.

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Bienvenido a OpenStreetMap, el proyecto dirigido a crear y ofrecer datos geográficos *libres* al mundo. Comenzamos debido a que muchos mapas que se cree que son libres, tienen en realidad restricciones legales o técnicas para su uso, lo cual evita que cualquier persona los pueda utilizar de una manera creativa, productiva o inesperada.



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Uso de OpenStreetMap



Usar OpenStreetMap

- [Navegar por nuestro mapa del mundo](#)
- Revisar el software listo para usar en tu dispositivo móvil, tu computadora o los servicios web disponibles
- ...más sobre el uso de OpenStreetMap

Contribución al mapa de datos libres



Guía de principiantes

- Examinar la [documentación](#) sobre elementos del mapa
- Examinar los [proyectos de cartografiado](#)
- ...más sobre la [contribución con datos al mapa](#)

Desarrollo de software



Desarrollo y uso de la plataforma

- Utilizar OpenStreetMap para tu software
- Contribuir al software de OpenStreetMap



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Develop

Develop - Otros idiomas

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OpenStreetMap isn't just open data - it's also open source, and you can help!

There are two major ways you can get involved in OpenStreetMap:

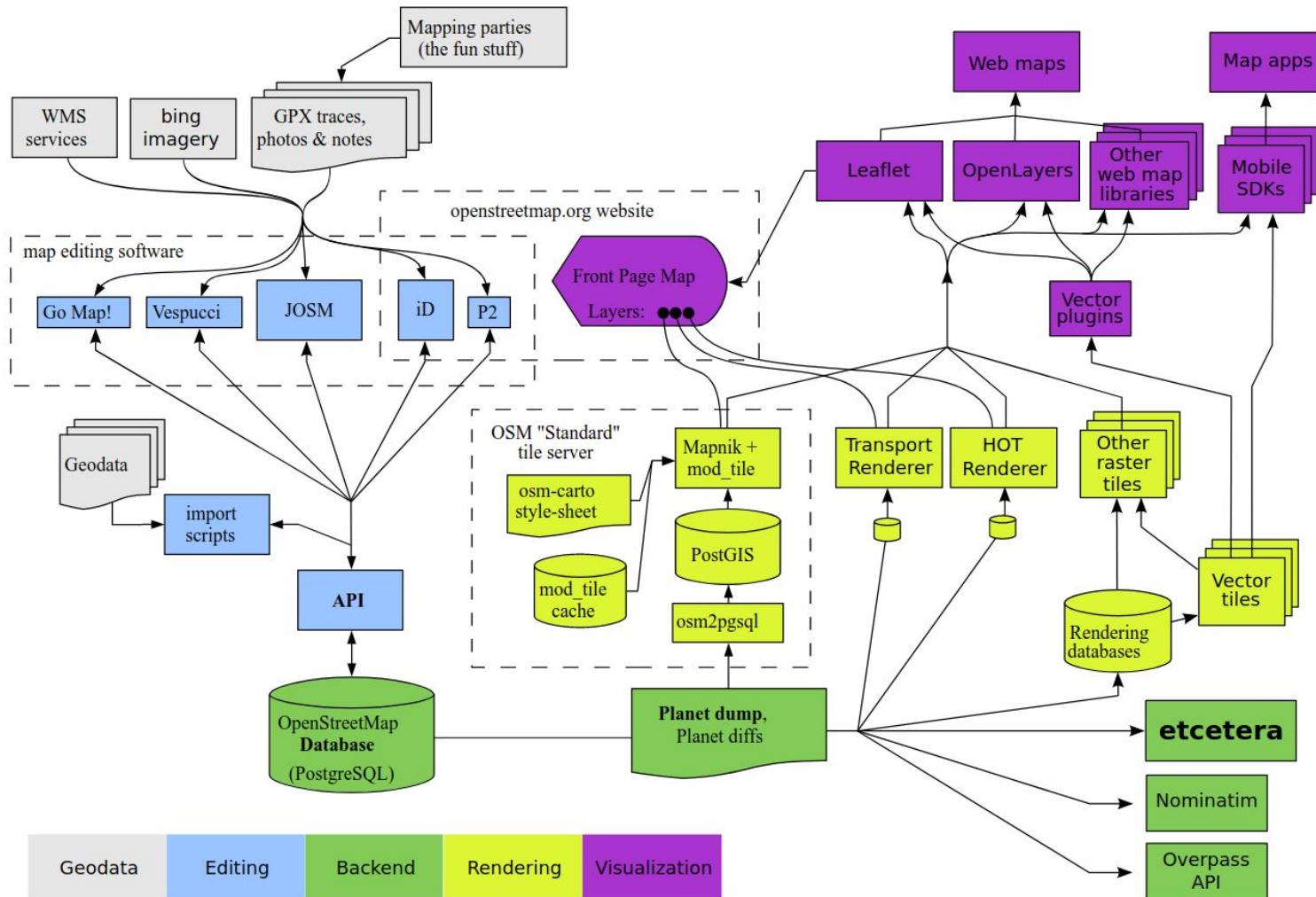
- By **developing the OpenStreetMap Platform itself**. This includes the OpenStreetMap.org website and related components and services.
- By **Using OpenStreetMap**. You can "use" OpenStreetMap data and services together with software and services from our community to build anything you want.

OpenStreetMap Platform

- Data** Elements • XML Schema • Data Dumps • File Formats • Converting • GPS Traces
- API** Documentation • Alternative APIs
- Website** Server Application • Web Frontend • Database • Component Overview
- To Do** Top Ten Tasks
- Admin** Servers • Dev Server • Testing APIs

Using OpenStreetMap for Development

- Embed** Showing a Map • Export
- Render** Your own tiles • 3D • Print • WMS • TMS
- Services** Routing/navigation • Search/geocoding
- Programming** Frameworks • Using a Database
- Other** Science Research • Books • Companies • Related Projects



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editor-layer-index

A unified layer index for OSM editors.

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osm-community-index

An index of community resources for OpenStreetMap

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atlas-checks

OSM data integrity checks with Atlas

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applepaintstyles

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maproulette-python-client

MapRoulette Client Library for Python

[openstreetmap](#) [osm](#) [mapping-tools](#) [maproulette](#)

id-upwards

labbuildings

Los Angeles County building import

[Python](#) [BSD-3-Clause](#) 14 [stars](#) 43 [issues](#) 16 [forks](#) 0 Updated on 2 Feb 2017

welcome

A webapp designed to make it easier to welcome new mappers to OpenStreetMap.

[MIT](#) 0 [stars](#) 2 [issues](#) 0 [forks](#) 0 Updated on 7 Jan 2017

routerelationranger

New incarnation of defunct Relation Pages. Lists out route relations state by state in the US with links to edit / inspect.

[HTML](#) 0 [stars](#) 6 [issues](#) 2 [forks](#) 1 Updated on 13 Dec 2016

nycbikelanes

NYC bike lane cleanup and update

[Python](#) 3 [stars](#) 6 [issues](#) 2 [forks](#) 0 Updated on 11 Nov 2016

basket

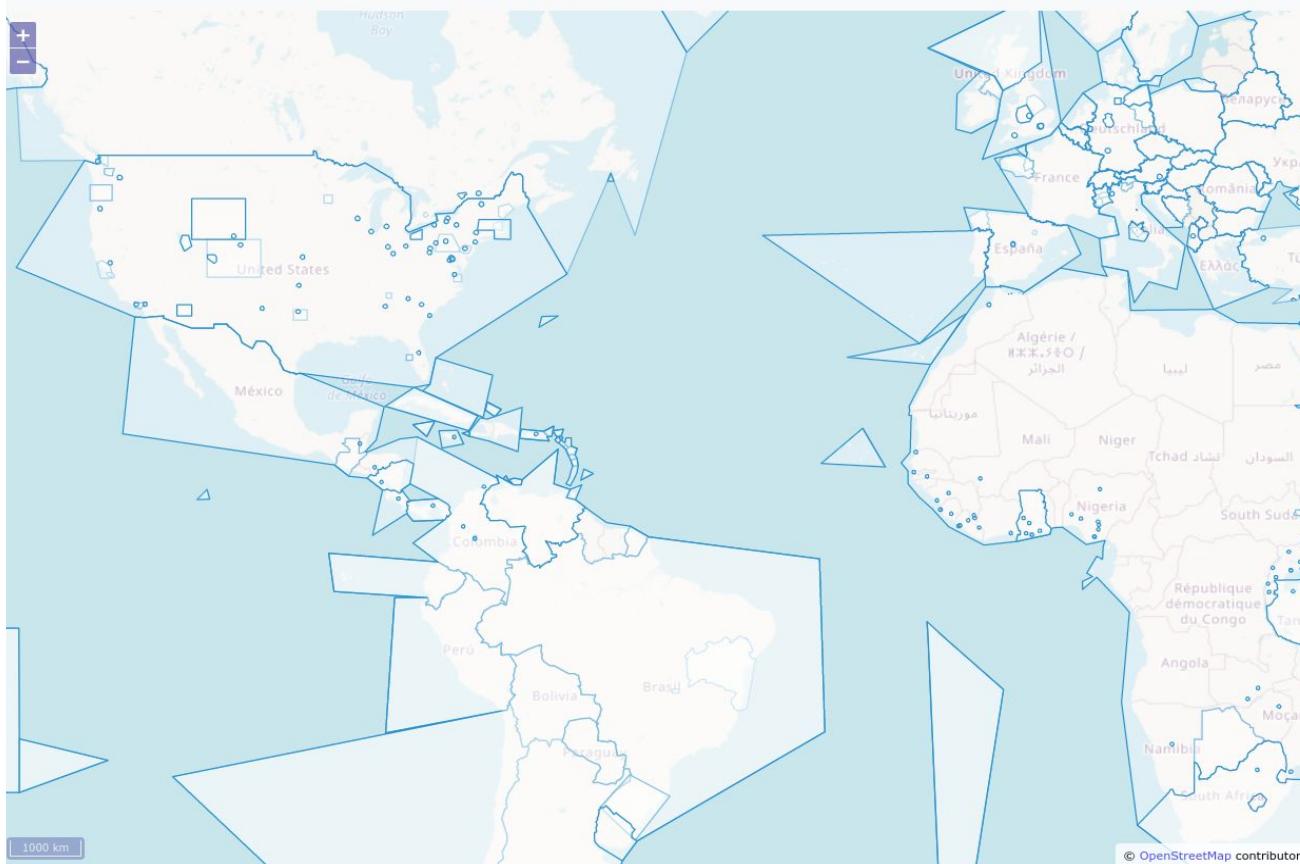
[JavaScript](#) [MIT](#) 3 [stars](#) 4 [issues](#) 10 [forks](#) 0 Updated on 21 Oct 2016

osmlint2csv

Forked from Rub21/osmlint2csv

[JavaScript](#) 1 [stars](#) 1 [issues](#) 1 [forks](#) 0 Updated on 21 Oct 2016

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Foros y Wikis



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