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MEXICO RX

Data science consultant, Premise Data – 2020

Critical facilities may not be easily discoverable with modern search engines or mapping services. The current case study is from a recent crowdsourcing campaign in Mexico City, where contributors were asked to find and document pharmacies. Data from contributor submissions were analyzed in order to best approximate unique locations of pharmacies and to understand surrounding features through text extraction. This solution combined OCR and several clustering algorithms – PAM + Levenshtein Distance for clustering texts, and DBSCAN for spatial clustering – to predict single pharmacy locations.

FUBAR

Data Scientist, Uber – 2019

Dockless bike sharing systems face the intractable problem of enforcing orderly user parking in dense urban spaces. We thought it could it be solved with the help of machine learning. The project was designed and developed through the team effort of myself and Krys Czarnecki, both participants in the 3-month Data Science Retreat (DSR) based in Berlin. Fubar is a prototypical computer vision program that combines transfer learning with YOLO object detection to solve the classic problem of improper parking.

JUMP Operations

GIS Developer, JUMP – 2018

Under the traditional bikeshare model, people park bikes in designated docks around the city. When ushering in dockless bikes, it's a double-edged sword – consumers have the flexibility to park bikes where it's most convenient, but without a dock, they need hyper-granular location information to find a bike. This map-based visualization is the product of my work as the lead GIS developer at JUMP

The History of GULAG

Researcher, Urbica – 2018

Interactive map and information portal that displays the historical development of the GULAG labor camps from inception to end of operation. In cooperation with the research department and the curatorial and technical team of the museum, we have created a product where high technology, history, and social significance are intertwined.

Erasmus Mundus Association

Volunteer cartographer – 2017

Created the first geospatial database and map-based search tool for Erasmus Mundus graduate courses and locations using the Mapbox GL JS library.

Rebalancing Citibike

Master's thesis in collaboration with Urbica - 2016

Visualization of Master's coursework in Geospatial Technologies using Mapbox GL and D3. This study analyzes over 10 million trips taken in New York City between 2012-15 and focuses on a few of the most intractable problems that any robust bikeshare network faces: rebalancing stations so that they are neither full nor empty, and bike availability. See Medium blog.

Circle of Life

Intern, National Geographic (Russia) - 2016

This article focused on the reindeer migration in the Taimyr Peninsula. Migration is a difficult task. Behind every new migration cycle there are new obstacles: turbulent rivers, inclement weather, and predators. Far more dangerous, however is for reindeer to stop moving. These roamers of the north have been able to outlive their contemporaries – mammoths and wooly rhinoceros – in part due to their constant movement.

Using R to Map Crime Density in Boston

Graduate student – Universidade NOVA de Lisboa - 2015

As a social phenomenon, crime has intrinsic geographic qualities. At the beginning of the 2000s, the city of Boston experienced a significant uptick in crime rates relative to the previous decade. The current study serves to both update and supplement the geographical component of crime analysis in Boston by making use of the demographic data from the 2010 U.S. Census and a comprehensive crime incident database.

Shrinking of Lake Urmia, Iran

Graduate student – Universidade NOVA de Lisboa - 2014

At its full extent, Lake Urmia is the sixth largest saltwater lake on earth with a surace of approximately 5,200 km2. The lake has been rapidly shrinking for the past several decades due to drought, climate change, and poor water resource management. The objective of this study is to determine the extent of land cover change in the last three decades.

Topography of Terror

GIS intern– NextGIS and Memorial – 2014

Topography of Terror serves to inform people today – whether amateur historians, victims' relatives, or simply citizens who want to know the truth – by mapping the locations of sites associated with state repression.

Imperiia

Research Assistant, Harvard University Department of History - 2013

This research project, directed by Dr. Kelly O' Neill at Harvard University, makes available a series of annotated datasets and historical maps related to the physical infrastructure, demographics, culture, and economy of the tsarist state.