

# ALEXANDER TEDESCHI | PORTFOLIO

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## NEOH3

### ***Data Scientist, Rystad Energy, 2022***

Lightweight microservice that provides shortest-path maritime routes using an undirected graph. Built using the h3 geospatial indexing system on neo4J and streamlit.

## Mapswipe

### ***Volunteer, American Red Cross, 2022***

Helped develop an experimentation plan to quantify the data quality of crowdsourced building footprints in the Mapswipe mobile app.

## IIEP-UNESCO

### ***Issue Paper proposal, UNICEF 2020***

Proposes a geospatial methodology for the optimal location of primary schools in Member States with high population growth using publicly available datasets.

## MEXICO RX

### ***Data science challenge, Premise Data - 2020***

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

## FUBAR

### ***Data Scientist, Uber – 2022***

Dockless bike sharing systems face the intractable problem of enforcing orderly user parking in dense urban spaces. We thought it could be solved with the help of machine learning. The project was designed and developed by a two-person team – myself and Krys Czarnecki –

during our participation in a 3-month Data Science Retreat (DSR) in Berlin. Fubar is a prototypical computer vision program that combines transfer learning with YOLO object detection to detect locked and unlocked bikes.

## JUMP operations

### ***GIS Developer, JUMP – 2018***

Under the traditional bikeshare model, users park bikes in stations distributed around a city. The introduction of dockless bikes have given consumers the flexibility to park bikes where it is most convenient, but this freedom demands highly accurate location data. As the lead GIS developer at JUMP, I helped develop a mobile-friendly web application built on Django and Mapbox that directed our operators to pickup and drop-off locations.

## The History of GULAG

### ***Researcher, Urbica – 2017***

An interactive map and information portal that visualizes the historical development of the GULAG labor camps from their inception in the 1930s to their abolition in 1960. In cooperation with the research department of the GULAG history museum, I helped to UX test this application which combines technology, history, and remembrance.

## Rebalancing Citibike

### ***Master's thesis visualization – 2016***

Visualization of Master's coursework in Geospatial Technologies built using Mapbox GL and D3. This study analyzes over 10 million trips taken in New York City between 2012-15 and focuses on a key challenge facing all bikeshare networks: rebalancing.

## Circle of Life

### ***Intern, National Geographic (Russia) -2016***

Created a static map to illuminate an article about reindeer migration on the Taimyr Peninsula. Seasonal migration is a difficult task. Behind every new 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 woolly rhinoceros – in part due to their constant movement.

## Using R to Map Crime Density in Boston

### ***Master's student, University of Münster -2014-2016***

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

### **Shrinking of Lake Urmia, Iran**

### ***Master's student, University of Münster -2014-2016***

At its full extent, Lake Urmia is the sixth largest saltwater lake on earth with a surface area of approximately 5,200 km<sup>2</sup>. 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 known to be associated with state repression.

### **Imperiia**

### ***Research Assistant, Department of History, Harvard University - 2013***

Directed by Dr. Kelly O' Neill, this research project was made possible by the Harvard Digital Teaching Fellows (DiTF) program. Using ArcGIS, I helped georeference, digitize, and annotate hundreds of historical maps covering physical infrastructure, demographics, culture, and economy of the tsarist state.