JIMMY FENG

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Third-year Geography PhD Student and Graduate Fellow at the University of Tennessee. Skills include **space-time GIS, Python, R, deep learning, text mining, and spatial analysis** for sustainable and socially equitable development and urban planning initiatives. **My proposed dissertation posits a new theory of access to various human needs** that relates concepts of space, time, and access. Focus is also given to (1) identifying quantitative and qualitative datasets for analysis of five different dimensions of access: availability, accessibility, affordability, accommodation, and acceptability, and their conceptual extensions and (2) how the proposed framework can be implemented with various methods to examine people's situations of access. A case study of food access will be used to apply these ideas in practice. **Formerly a geospatial consultant at (1) National Geographic Society's Geographic Visualization Lab**, delivering maps and reports of location analyses, and strategically managing the development of a dynamically updated land-cover map of the world with partners at Google and World Resources Institute **and (2) the non-profit housing development organization Community Solutions**, leading the implementation of geospatial data analytics for land and property acquisition for affordable housing development.

EDUCATION

University of Tennessee, Knoxville | Anticipated May 2022 | GPA: 4.00 — **Knoxville, TN**
Doctor of Philosophy in Geography; Fast-Track PhD and awarded a four-year Graduate Fellowship — *Aug 2018 – Present*

State University of New York at Geneseo — **Geneseo, NY**
Bachelor of Arts in Geography – cum laude | Minors in Asian Studies & Urban Studies — *Aug 2014 – May 2018*

CURRENT AWARDS

$9000 / Year	**University of Tennessee, Knoxville Graduate Fellowship** Four-year university graduate fellowship. This comes with a full tuition waiver and teaching assistantship. Monetary figure represents the fellowship award only	*Aug 2018 – May 2022*
$8344	**Thomas Graduate Fellowship** Twelve months of support to pursue dissertation research	*May 2020 – Apr 2021*

COURSES

MACHINE LEARNING	GIS | SPATIAL ANALYSIS	URBAN DYNAMICS	OTHER
Deep Learning	Seminar in GIScience	Seminar in The Livable City	Spatial Problems and Policies
Text Mining	Applied GIScience	Seminar in Urban Issues	Geographic Concept/Method
Data Mining	GIS for Transportation	Seminar in Urban/Econ Geog.	Environmental Planning
Database & Big Data Tech.	Quantitative Geography	Urban and Regional Planning	Cartography
Bayesian Data Analysis	Programming in GIS	Space Time Human Dynamics	Geospatial Software Design
Data Engineering & Visualization	Geographic Information Management & Process	Geography and Planning in the European Union	Seminar in Geography of Transportation

SKILLS

LANGUAGES	
English	Native
Cantonese	Native
Mandarin	Basic

MAPPING/VISUALIZATION	PROGRAM/SCRIPT	OTHER
ArcGIS (Desktop, Pro, Online, StoryMap)	Python: scikit-learn, nltk, keras, tensorflow, networkx	HTML
QGIS	R: caret, tidyverse, sf, ggplot	Adobe Creative Suite
TransCAD	Google Earth Engine	Microsoft Office
Visualization: Dash | Plotly | Matplotlib | Seaborn | Gephi	MongoDB	Photography & Photo Editing
	SQL | PostgreSQL	Git
		GitHub
		Command Line Interface

TEACHING EXPERIENCE

University of Tennessee, Knoxville, Department of Geography — **Knoxville, TN**

Lead Instructor – GEOG311: Geovisualization and Geographic Information Sciences — *CURRENT*
Graduate Teaching Assistant – GEOG 411: Intermediate GIS — *SP 20*
Graduate Teaching Assistant – GEOG 415: Quantitative Methods in Geography — *FA 19*
Graduate Teaching Assistant – GEOG 311: Geovisualization and Geographic Information Sciences — *SP 19*
Graduate Teaching Assistant – GEOG 101: World Geography — *FA 18; FA 19*

- Direct lab sessions; instruct students on fundamental programming, statistical, and research design concepts
- Use R programming to teach students about multivariate regression, hypothesis tests, and data structures
- Teach and assist students in GIS software and fundamental geographic and visualization concepts (e.g., data models, geographic data, spatial autocorrelation, coordinate systems, color theory, data classification)

PROFESSIONAL & RESEARCH EXPERIENCE

Dissertation Research: New Theory of Access to Human Needs — **Knoxville, TN**
Nov 2020 – Present

- Reviewed 100+ articles relating to philosophy of space-time, Geographic Information Science, time geography, and geographical access/accessibility to food and healthcare.
- Developed Python scripts to 1) extract 85,000 grocery store reviews for 240 grocery stores in Knoxville, TN, USA from Google Maps and 2) analyze the semantics and topics of reviews with text mining algorithms.
- Successfully submitted a proposal to the university's Institutional Review Board to survey 500 residents about their use of digital applications for grocery shopping, GPS tracks, and attitudes in food shopping

Deep Learning for Business Applications — **Knoxville, TN**
Aug 2020 – Dec 2020

- Deployed a convolutional neural network to classify images of fashion merchandise based on parameters from a grid search for filters, kernel size, stride, and padding. Model accuracy of 88.4% and test loss of 0.597.
- Wrote a TensorFlow-compatible grid search algorithm in Python to tune the number of hidden layers, number of hidden neurons, optimizers, learning rate, and activation function for deep neural networks.
- Developed and tuned a deep neural network to predict gross margin of a product, per unit of time shown, of a given product in shopping network shows

Human Dynamics of Scientific Knowledge — **Knoxville, TN**
Graduate Research Assistant for University of Tennessee | PIs: Drs. Shih-Lung Shaw & Shellen Wu — *May 2020 – Jan 2021*

- Developed eleven Jupyter notebooks and various Python functions to clean, pivot, and geocode three spreadsheets containing the resume information of 1072 authors across 20 years of articles in the journal *Science* for further social network, natural language processing, and spatiotemporal/GIS analysis
- Created space-time GIS layers and functions in ArcGIS Map 10.8 to query, visualize, and analyze movement trajectories of global author collaboration networks

National Geographic Society – Geographic Visualization Lab — **Washington, DC**
Geospatial and Cartography Consultant — *May 2019 – Sep 2019*

- Managed the LabelBox interface used by more than 50 satellite imagery experts to manually classify images
- Worked on the development of a dynamically-updated global land cover map for animal and land conservation: https://drive.google.com/file/d/1JW9Egg05I0gGHC6a6hHR1Hzbh55DARCM/view
- Created 4 maps derived from satellite imagery for a science expedition in the Russian Arctic Sea

How well do various transportation services serve the diversity of neighborhoods in New York City? — **Knoxville, TN**
https://static1.squarespace.com/static/5ba55b42a0cd277d52808e5c/t/5d8ce55d27bcd752d8b96621/1569514867386/GEOG_515_Report.pdf — *Dec 2018 – May 2019*

- Used ArcGIS's Network Analysis to determine the number of accessible jobs and quality high schools (< 1 hour commute), via public transit, between the 55 census public-use microdata areas
- Automated the calculation of an accessibility matrix at every hour of weekdays and weekends to determine the number of reachable jobs between PUMAs with a custom model in ArcGIS's ModelBuilder
- Network and statistical analyses identified an unequal distribution of public transit service provision in NYC. Results indicate that areas in west Brooklyn and lower Manhattan have the greatest provision of public transit service while areas in the Bronx and east Queens have the worst access to public transit in the city; and that the disparity in the frequency of public transit service between the weekday and weekend is greatest in east Brooklyn and Queens. People living in lowest Manhattan and west Brooklyn also have the greatest access to jobs and quality high schools.

Community Solutions — **Brooklyn, NY**
Geospatial and GIS Consultant — *Aug 2018 – Jan 2019*

- Analyzed survey results of 40 residents and 267 households in the Seth Low Housing Projects which found that > 33% suffered from rodent or cockroach infestation and 30% identified mold. Click for full report.
- Reports and analyses of the housing landscape in Brownsville were used to establish a community land trust
- Constructed a GIS database containing housing, land parcel, zoning, and population data in Brownsville
- Analyzed areas with a large number of housing foreclosures, potential land parcels for acquisition, and distance to train stations with various geospatial tools including hotspot and network analysis in ArcGIS Pro

New York City Department of Sanitation (DSNY) | Bureau of Recycling and Sustainability — **New York, NY**
Summer Operations Research Analyst — *Jun 2016 – Aug 2016*

- Manually verified addresses of 1,200 locations to be included in DSNY's organic waste collection program
- Quantified the demographic and socioeconomic composition of residents in each of 59 community districts to identify recycling performance throughout New York City
- Collected more than 20,000 foam trays throughout lower Manhattan used for a test in DSNY's waste recycling facility to examine the feasibility of recycling polystyrene. Results led to the foam ban in NYC.