Tuo Liu

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EDUCATION

University of Arizona Tucson, AZ
Ph.D. of Science in Environmental Hlth Sci *Sep 2021 - present*
GPA: 4.00 / 4.00

University of Michigan Ann Arbor, MI
Master of Science in Environmental Hlth Sci *Sep 2018 - May 2020*
GPA: 3.80 / 4.00

Chinese University of Petroleum, Beijing Beijing, China
Bachelor of Science in Environmental Sci *Sep 2012 - May 2016*
GPA: 3.06 / 5.00, 80 / 100 **| Honors:** Academic Performance Scholarship, Outstanding Student Leader (2013-2015)

RESEARCH PROJECTS

Metabolomics with Fire Fighters: urinary biomarker identification associated with prevalent cancers among fire fighters
Research Assistant, Dept of Community, Environment & Policy, University of Arizona
Advisor: Dr. Jefferey Burgess & Dr. Melissa Furlong *Sep 2021 - Present*
• Metabolomics data analysis pipeline: data acquisition using LC-MS, formulation & annotation with Compound Discovery and in-house and online databases, data QC assurance, data analyses using PLS-DA with R, data visualization with ggplot2/R
• Presentation & communication: poster presentation at Cancer Center Retreat, manuscript composition

Invisible Fishers: intervening anemia among female fish smokers of reproductive age in Ghana
Student Researcher, Dept of Environmental Health Sciences, University of Michigan.
Advisor: Dr. J. Tim Dvonch *Dec 2018 - Dec 2019*
• Literature review: correlation between $PM_{2.5}$ and CO under various occupational/domestic settings
• Collected and assessed 120 female fish smokers' occupational exposure data to $PM_{2.5}$ and CO
• Assessed the validity of CO being a reliable surrogate of $PM_{2.5}$ by LME modeling
• Identified determinants of personal exposure under given occupational background
• Analytical tool used: R/Excel

Biomarkers of Air Pollutants Exposure in the Chinese aged 60-69 (China BAPE)
Research Intern, Department of Toxicology, NIEH China CDC
Advisor: Dr. Song Tang *May 2020 - Aug 2020*
• Literature review: air pollution and metabolic responses; linear-mixed effect modeling
• Data processing: combining data of personal exposure, physical examination, fixed-site ambient monitors, biomarkers concentrations from Blood, Urine, and Feces samples
• Data visualization, and analysis with R & Excel: boxplots, Venn diagram, Heat map, correlation map, OPLS-DA analysis, LME modeling

Seasonal fluctuation of O^{18}/O^{16} in rainfall at Changping district, Beijing
Undergraduate Researcher, The Chinese University of Petroleum, Beijing
Advisor: Dr. Tonggang Zhang *Sep 2015 - May 2016*
• Literature review: O^{18}/O^{16} ratio in different media and its implication to climate change
• Collected seasonal rainfall samples through 8.2015 to 3.2016
• Analyzed O^{18}/O^{16} ratio in rainfall samples from different seasons
• Thesis: elucidated the seasonal changes in O^{18}/O^{16} ratio and its correlation with local climate patterns

DATA SCIENCE PROJECTS

Exploring neighborhoods & Chinese restaurants in Toronto

IBM Data Science Professional Certificate Capstone *May 2020*

- Web scrapped Postal code, borough, neighborhood, geographical coordinates of the neighborhoods & demographics of Toronto from Wikipedia
- Used Foursquare API to extract neighborhood information, e.g., restaurants, bars
- Used K-means clustering & Folium map figure out the status quo of Asian & Chinese restaurants and which neighborhood is most suitable for starting a new Chinese restaurant

Gasoline Retail Price Tracker

Dec 2021

- Data acquisition using EIA API
- Data preprocessing with Python
- Used Dash-Python to visualize weekly fluctuation of regular gasoline price in selected states
- Used pythonanywhere to automate weekly update and visualization

SKILLS & AWARDS

- Technical: Professional Certificate of Data Science from IBM, Proficient in Python, R, SQL
- Languages: Native in Mandarin, fluent in English
- Additional: Clean Water Volunteer, Huron River Council, Ann Arbor, MI, US
- Interests: Bodybuilding, Fishing, Coding, Data Visualization
- Awards: Academic Performance Scholarship (2013-2015), Outstanding Student Leader (2013-2015)
- GRE: Verbal 161/170; Quantitative 170/170; Analytical Writing 4.0/6.0