Zongchao Liu

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EDUCATION

School of Public Health, Columbia University   New York, USA

Master of Science in Biostatistics   *Expected May. 2021*

Relevant Coursework: Data Science, Probability, Biostatistical Method, Epidemiology

School of Public Health, Shandong University   *Jinan, China*

Bachelor of Medical Science   GPA:3.98 / 4   *Jul. 2019*

Relevant Coursework: Advanced Mathematics, Linear Algebra, SAS programming, Biostatistics, Statistics With R, Epidemiology, Human Genetics, Biochemistry & Molecular Biology, Machine Learning, Basic Medicine and Clinical Medicine Series

School of Population and Public Health, University of British Columbia *Vancouver, Canada*

Summer Session   *Aug. 2017*

Relevant Coursework: Social Determinants of Public Health, Introduction of Public Health

RESEARCH EXPERIENCES

Identification of a Radiomic Signature for Improving Individualized Medicine in Colorectal Carcinoma

Sixth Affiliated Hospital of Sun Yat-sen University   *Guangzhou, China*

Research Assistant   *Jun.2019 – Aug.2019*

- Used Python to transform CT images and extract nearly 1280 first order statistics, texture and shape features from the transformed and original images
- Selected the robust features that can be used for cancer prediction via LASSO regression and finally identified nearly 30 robust features by using glmnet in R
- Calculate the rad-score for each patient based on the selected features and conduct a survival analysis among patients with high, medium and low levels of rad-scores, verifying the predictive value of the selected features

Prediction for Incidence Rates of Cervical Cancer and Endometrial Cancer in Shandong, China Based on an Improved Gray Model (1, 1)

Department of Biostatistics, Shandong University   *Jinan, China*

Research Assistant   *Dec.2018 – Jun.2019*

- Calculated and presented the crude, age-standardized and urban(rural) incidence rates of cervical cancer and endometrial carcinoma in Shandong Province, 2013- 2017
- Built an accurate and improved gray model(1,1) by Python to predict the incidence rates of cervical cancer and endometrial carcinoma from 2018 to 2020 in Shandong, verifying other previous prediction of the incidence rates

Research on Covariates Adjustment and Single Nucleotide Polymorphisms (SNPs) Identification in Genome-wide Association Study (GWAS)

Department of Biostatistics, Shandong University   *Jinan, China*

Research Assistant; Advisor: Dr. Fuzhong Xue   *Jul. 2018 - present*

- Collected more than 9,900 published articles about GWAS of cancer and cardiovascular

diseases and categorized them based on studied traits

- Designed and constructed database for all the articles, documenting specific SNPs, statistical methods, adjusted covariates, interval validation results and other parameters of each study
- Apply self-established statistical methods to determine the rationality and effectiveness of the adjustment of certain factors other than SNPs in current studies

Mapping Health: Big Data and Machine Learning for Tracking Population Health in Shandong Province, China

Department of Biostatistics, Shandong University   *Jinan, China*
Research Assistant; Advisor: Dr. Fuzhong Xue   *Jan. 2018 - Sept. 2018*

- Collected data using a multistage sampling method and standardized the dataset on healthcare services and drug usage in Weihai from the 1980s, improving the validity of 136 datasets with more than 10,000 variables of approximately 5,000,000 people in Shandong Province
- Designed and constructed Diabetes Knowledge Graph using Cypher Language in Neo4j, including the complete process for screening, diagnosis, treatment, and education
- Refined the "predictive-diagnostic-therapeutic" pathways from 61 official diabetes handbooks and coded them into the graph database as specific nodes and relationships, constructing the basis for the application of deep learning algorithms

Community Health Assessment

Department of Biostatistics, Shandong University   *Jinan, China*
Research Assistant; Advisor: Dr. Fuzhong Xue   *Apr. 2018 – Jun. 2018*

- Conducted exploratory data analysis with General Social Survey (GSS) data, extracting and processing information of 50,761 observations and 114 variables, using R packages(dplyr, statsr, ggplot2, and MASS); screened the key factors and analyzed the relationship between socioeconomic factors and health status in R

- Performed exploratory data analysis with Behavioral Risk Factor Surveillance System (BRFSS) data, processing 491,775 observations and 330 variables using R; examined the relationship between alcohol consumption and mental health status.

Assessment of Trans Fatty Acids (TFAs) content in Milk Teas Sold in Jinan

Center for Hygienic Analysis and Detection, Shandong University   *Jinan, China*
Researcher; Advisor: Dr. Xiaodong He   *Apr. 2017 - Mar. 2018*

- Measured the TFA content in 69 types of semi-solid lipid and liquid milk teas via gas chromatography, following the national standard (GB5009.257-2016)
- Conducted quantitative and qualitative research on GC-2010 Gas Chromatography to validate the nutrient contents of samples
- Analyzed the collected data and drafted a research report for customers, presenting the risk index on TFA intake and improving the accuracy of nutrition labels

Research on Nanoparticles Targeting Osteoblasts Carrying miRNA-21

School of Dentistry, Shandong University   *Jinan, China*
Lead Researcher; Advisor: Dr. Fulan Wei   *Sept. 2016 - Mar. 2018*

- Investigated the role of Periostin (OSF-2) in bone tissue regeneration and discussed potential strategies for nano-based drug delivery, such as nephroblastoma overexpressed (CCN3/NOV) and human laminin γ 2 chain, in a mini-review

- Compared the feasibility and delivery efficiency of different types of nanoparticles carrying miRNA-21 to promote bone tissue regeneration
- Proposed the significance of phage display methodology in seeking peptide motifs of translocating nanoparticles

Risk Assessment of Excessive Alcohol Consumption

Center for Hygienic Analysis and Detection, Shandong University　　　　　　*Jinan, China*
Researcher; Advisor: Dr. Xiaodong He　　　　　　*Apr. 2016 - Mar. 2017*

- Conducted surveys on 502 college students and collected their oral mucosal epithelial cells for ALDH analysis by Polymerase Chain Reaction (PCR)
- Processed the data and analyzed the relationship between excessive alcohol consumption and behavioral factors using SPSS and EpiData
- Gave a poster presentation assessing the risk index of excessive alcohol consumption based on the comparison of students' drinking behaviors and genotypes

Work Experiences

Qingdao Center for Disease Control and Prevention　　　　　　*Qingdao, China*
Staff Member　　　　　　*Feb. 2019 – Jun. 2019*

- Managed health records of the citizens in Qingdao and assisted in occupational disease assessment meetings
- Conducted multivariate logistic regression to analyze the relationship between occupational factors and women depression and to analyze the relationship between tobacco use and occupational diseases

Shandong Qianfoshan Hospital　　　　　　*Jinan, China*
Intern Physician　　　　　　*May. 2017 - Jul. 2017*

- Monitored nutritional and health status of patients and collaborated with surgeons in surgeries in obstetrics and urology
- Input and standardized data on infants' health status and children's bone density using EpiData

Fudan University　　　　　　*Shanghai, China*
Remote Research Assistant　　　　　　*Jan. 2017 - Mar. 2017*

- Conducted literature reviews on more than 2,000 articles related to skin diseases caused by environmental factors from PubMed and Web of Science
- Screened literature related to the subject by using NoteExpress

ACTIVITIES AND LEADERSHIP EXPERIENCES

China Anti-Cancer Association Youth Council, *Member*	*2018*
Home Education Technology Co., Limited, *Teaching Assistant*	*2018*
Department of Public Relations, *Leader*	*2015-2016*
The Georgetown Initiative for U.S.-China Dialogue on Global Issues, *Participant*	*2016*
The 7th National Conference on Acute and Critical Poisoning Diseases, *Volunteer*	*2016*
Beijing Society of Biochemistry and Molecular Biology, *Annual Conference Participant*	*2016*
Jinan Center Hospital, *Volunteer*	*2016*
Wildfire Prevention Program, *Volunteer*	*2016*

HONORS & AWARDS

Outstanding Graduates	*2019*
Excellent Student Scholarship	*2016 - 2019*
Member of the Elite Class, Research Center for Eco-Environmental Sciences of Chinese Academy of Sciences	*2017-2018*
Science and Technology Innovation Training Program Funding	*2016-2018*
First Prize, Shenzhen Cup Mathematical Modeling Competition	*2017*
Second Prize, Shandong Province Entrepreneurship Plan Competition	*2017*
Bronze Award, Information Technology and Information Innovation and Entrepreneurship Competition in Shandong Province	*2017*

SKILLS

Technical: SAS, R, SPSS, Python, Neo4j, Octave, EpiData, LaTex, MATLAB
Language: Mandarin and Cantonese Chinese (native), English (fluent)