

# Zongchao Liu

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## EDUCATION

<b>Mailman School of Public Health, Columbia University</b> <i>Master of Science in Biostatistics</i>	<i>New York, USA</i> <i>Expected May.2021</i>
<b>School of Public Health, Shandong University</b> <i>Bachelor of Medical Science in Preventive Medicine</i>	<i>Jinan, China</i> <i>Sep.2014 – Jun.2019</i>
<b>School of Population and Public Health, University of British Columbia</b> <i>Exchange student</i>	<i>Vancouver, Canada</i> <i>Jul.2017 - Dec.2017</i>

## SKILLS

**Knowledge:** Statistical Learning & Deep Learning, Statistical Inference, Epidemiology, Survival Analysis, Longitudinal Analysis, Computational Statistics, Basic & Clinical Medicine, Brain Imaging, Real Analysis

**Technical:** Python, R, SAS, Neo4j, MATLAB, EpiData, LaTeX, Git version control

**Language:** Fluently both orally and written in English, Cantonese and Mandarin

## RESEARCH EXPERIENCE

<b>Department of Mental Health Data Science, NYSPI</b> <i>Research Assistant</i>	<i>Mar.2020 – present</i> <i>New York, USA</i>
<ul style="list-style-type: none"><li>● Designed a computational procedure for cleaning and matching controls in customized ratio for the Adolescent Brain Cognitive Development (ABCD) Study</li><li>● Conducted experiments with 3D VGG structure to predict CBCL-attention score from 3D DTI FA map under different scenarios</li><li>● Will embed the predictive models with knockoff and integrated gradient techniques to interpretably select features from diffusion tensor brain imaging data with control of false discovery rate</li></ul>	
<b>Department of Epidemiology, Columbia University</b> <i>Research Assistant</i>	<i>Aug.2020 – present</i> <i>New York, USA</i>
<ul style="list-style-type: none"><li>● Developed a procedure to filter patients with diagnosis of autism spectrum disorder (ASD) and calculated their comorbidity conditions association (standardized morbidity ratios) with ASD by adjusting age, ethnic groups and other factors</li><li>● Conducted a hierarchical clustering analysis to differentiate selected patients into different subgroups and investigated on the distributive patterns of the comorbidities within the subgroups</li></ul>	
<b>Research Center for Public Health, Tsinghua University</b> <i>Research Assistant</i>	<i>Jul.2020 – present</i> <i>Beijing, China</i>
<ul style="list-style-type: none"><li>● Investigated on the distributional patterns of Chinese college students' casual sexual relationship (CSR) and the associated risk factors, and quantitatively evaluated the risk by exploring on behaviors and attitudes towards CSR</li><li>● Constructed vectors of features for each subject and conducted a cluster analysis to decode the characteristics of the population that has the highest tendency to have CSR; prepared for the manuscript as the first author</li><li>● Explored and ranked factors of sociodemographic, health behavior, and awareness in predicting occurrence of casual relationship by constructing a Bayesian Addictive Regression Tree model</li></ul>	
<b>Guangdong Institute of Gastroenterology</b> <i>Research Assistant</i>	<i>Jun. 2019 – Aug. 2020</i> <i>Guangzhou, China</i>
<ul style="list-style-type: none"><li>● Developed scripts for automatically matching and correcting patients' information, as well as extracting radiomics features from CT, MRI images by customized filters</li><li>● Conducted feature selection process and constructed predictive models by implementing random forest, gradient boosting machine, support vector machine to predict the pathological complete response (pCR) in patients with rectal</li></ul>	

## Department of Biostatistics, Shandong University

Jan.2018 – Jun.2019

Research Assistant

Jinan, China

- Constructed an improved gray model (1,1) 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
- Conducted an epidemiology study by presenting the crude, age-standardized and urban(rural) incidence rates of cervical cancer and endometrial carcinoma in Shandong Province, 2013~2017
- Designed and constructed Diabetes Knowledge Graph using Neo4j by coding specific nodes and relationships including the complete process for screening, diagnosis, treatment, and education

## PUBLICATIONS AND PRESENTATIONS

- Zhuang Z., Liu Z.<sup>#</sup>, Wang X., et al. Radiomics analysis of computed tomography for predicting pathological response to neoadjuvant treatment in rectal cancer: Post-hoc Analysis of a Randomized Controlled Trial [J]. *Frontiers in Oncology Gastrointestinal Cancers*. 2020, under review
- Hu B., Li R., Liu Z., et al. Insight into the Hospital-based Low-medium Intensity Rehabilitation on Postoperative Outcome in Patients with Total Knee Arthroplasty: A Prospective Randomized Study [J]. *Knee Surgery, Sports Traumatology, Arthroscopy*. 2020, under review
- Liu Z., Lin Z., Cao W., Encoding Chinese College Students' Hookup Culture: Prevalence and Characteristics. *Manuscript in preparation*
- Liu Z., Lin Z., Ranking sociodemographic, health behavior, and awareness in predicting occurrence of casual relationship among college students: A Bayesian machine learning approach. *Manuscript in preparation*
- Liu Z., Li G., Excess comorbidities associated with autistic spectrum disorder diagnosis in pediatric hospital discharge records, *Manuscript in preparation*
- Liu Z., Wang S., Ge Y. (Aug 10, 2017). "Global Health Issues on Childhood Obesity" Poster session presented at Undergraduate Research Conference at University of British Columbia, Vancouver.

## RELEVANT PROJECTS

- [Fragility Index for Clinical Trials](#)
- [A Simulation Study to Compare Two Bootstrapping Methods for propensity-score matching](#)
- [Implementation and optimization of algorithms on cancer diagnosis dataset](#)
- [Analyses of daily COVID-19 cases across nations](#)
- [A Bayesian model of hurricane trajectories](#)

## RELEVANT WORK EXPERIENCES

Qingdao Center for Disease Control and Prevention

Qingdao, China

Staff Intern

Feb. 2019 – Jun. 2019

Shandong Qianfoshan Hospital

Jinan, China

Intern Physician

May. 2017 - Jul. 2017

## HONORS & AWARDS

Outstanding Graduates

2019

Excellent Student Scholarship

2015-2019

Member of the Elite Class, Chinese Academy of Sciences

2018

First Prize, Shenzhen Cup Mathematical Modeling Competition

2016

Bronze Award, Information Technology and Entrepreneurship Competition

2017