Richard Liu

guanzhi97@gmail.com | Github | Website

Education

University of Chicago
B.A. Economics, B.S. Mathematics
- GPA: 3.73
- Honors: University Scholar Award, Dean's List

Research Experience

Interests: Geometry processing, discrete differential geometry, 3D machine learning, computer graphics

University of Chicago 3DL Graphics Lab – Rana Hanocka July 2021 – Present
Technical Research Assistant
- Text2Mesh: Semantic style manipulation of meshes by learning neural style field guided by a text-based style description with input mesh as a geometric prior
  - "Text2Mesh: Text-Driven Neural Stylization for Meshes": submitted to CVPR 2022
  - Paper, Website, Code
- Parameterization-Aware Segmentation: Unsupervised framework for generating local segmentation of a mesh conditioning on a user input with dual objectives of semantics and parameterization distortion

Yale Tobin Center for Economic Policy – John Eric Humphries and Yusuke Narita July 2020 – September 2021
Predoctoral Fellow
- Project Descriptions:
  - Algorithm is Experiment: Causal effect identification using algorithmic (ML) decisions as natural experiments
  - Experiment-as-Market: Welfare-maximizing experimental design
  - New Haven Public Schools: medium to long-term effects of free pre-k on child and parent outcomes
  - OPE for RL: Efficient off-policy evaluation for bandit and reinforcement learning settings
- Implemented Algo-is-Experiment and Experiment-as-Market methods as Python and R libraries

Booth School of Business – Anita Rao March 2020 – July 2020
Research Professional
- Project: Effect of industry funding on reported research findings in food science
- Trained and tested state-of-the-art NLP models to perform polarity analysis on the food science literature
- Regression analysis of the effect of market share concentration on publication polarity in specific food industries

Booth School of Business – John Barrios March 2017 – August 2018
Research Assistant
- Project Descriptions:
  - Pollution regulatory capture: Industry capture of EPA state bodies and laxity in pollution monitoring
  - Externalities of rideshare: Measuring the public costs of rideshare in terms of pollution and traffic fatalities

Papers/Presentations

Text2Mesh: Text-Driven Neural Stylization for Meshes November 2021
Submitted to CVPR 2022 (Paper, Website, Code)
- Text-driven neural stylization method over 3D meshes supervised by CLIP

Introduction to Mesh Parameterization September 2021
UChicago 3DL Talk Series
- Presented notes on mesh parameterization theory and methods to the UChicago 3DL Computer Graphics lab

Designing Online Advertisements via Bandit and Reinforcement Learning July 2021
(Peer-Reviewed) ICML 2021 RL4RealLife Workshop
- Proposes a new estimator for off-policy evaluation for Markov Decision Processes (MDP) and reinforcement learning, with desirable convergence and consistency properties.

The Unilateral Price Effects of Several National SFR Mergers January 2021
Yale Graduate Course ECON556
- Applies a 2-way fixed effects analysis framework to estimate the price effects of the largest mergers of single-family rental (SFR) companies in the US

Awards and Honors

ITA Tech Challenge – Top 150 September 2018
The Econometrics Game – 2nd place April 2018
- 12-hour competition to apply econometric analyses to a dataset and produce an academic paper
- Analyzed fracking company decisions on the extensive and intensive margin in relation to socioeconomic factors
- Presented results to a panel of 3 Nobel laureates and crowd of industry sponsors

Other Projects

Distributed Ray Tracer April 2021

- Wrote a distributed ray-tracer as part of the final project for CPSC578 Introduction to Computer Graphics at Yale
- Implemented distributed effects using Monte-Carlo integration and adapted Perlin noise towards cloud textures
- 3rd place in class "render-off" animation contest

ShelterTech Volunteer August 2019 – August 2020

- SF-based non-profit dedicated to bringing free wifi to shelters and making city services more accessible
- Assisted in developing mobile version of the SF Service Guide (directory and online assistant for navigating public services/shelters) for Android
- Coordinated outreach to community partners to maintain consistent flow of data quality checks

PotusSentiBot January 2020 – August 2020

- A natural-language (NLP) Twitter bot that estimates and tweets daily user sentiment of the two US presidential candidates during the 2020 election season
- Model is an adaptation of BERT towards Aspect-Based Sentiment Analysis (ABSA) as described in Sun et al. 2019

TFT Reroll Calculator March 2020 – May 2020

- Modeled the game states in the game Teamfight Tactics as a Markov chain to develop a general-purpose probability calculator for user-specified conditions
- Published as an open-source RShiny application

Skills

Technical (Languages): Python, C/C++, R, Stata, SQL, Linux, LaTex
Technical (Analysis): PyTorch, Tensorflow, sklearn, data.table, webscraping, GIS