Yichen **Li**

111 Cummington Mall. Rm 200B, Boston MA 02215

(+1) 8574004191 | ✉ liych@bu.edu | 🏠 http://cs-people.bu.edu/liych/ | ⬙ Antheali | in Antheayichenli

Education

Boston University   *September 2014 - September 2018*

BACHELOR OF ARTS IN COMPUTER SCIENCE   (SUMMA CUM LAUDE)   *Major GPA: 3.98/4.00*

- No.1 graduating academic performance (Top 1%): College Prize for Excellence in Computer Science
- Courses: Data Structures. Algorithms, Systems, Optimization Methods, Geometric Algorithms, Software Engineering

BACHELOR OF ARTS IN MATHEMATICS AND ECONOMICS   (SUMMA CUM LAUDE)   *Major GPA: 4.00/4.00*

- Courses: Probability Theory, Linear Algebra, Applied Statistics, Data Science, Econometrics, Advanced Calculus

Skills

Programming and Software Engineering   Python, Haskell, Java, Ruby, C#, C++, C, Objective-C, Swift, Android Studio
Computer Graphics/Vision and AR/VR   Unity3D, ARKit, ARCore, Tango, Geometry Processing, TensorFlow, PyTorch*, OpenCV*
Data Analytics   R, Matlab, STATA IC, Pandas, Seaborn, MongoDB, Bloomberg

Experience

Boston University Department of Computer Science   Shape Lab | IVC | AIR   *Boston, MA*

RESEARCHER   *September 2017 - Current*

- Work with researchers and experts across various fields to formulate research project through defining novel applications of human machine interaction technologies, including AR/VR, to existing computer graphics problems
- Learn related research works and technologies by self-teaching, searching and understanding relevant literatures
- Implement algorithms from existing literatures for geometry-based physical property inferences and propose new algorithms for stabilization optimization in mesh form ready to be 3d-printed
- Use ARKit and Google Tango to achieve AR-enabled 3D model auto-recognition and physical property visialization
- Create Augmented Reality user interface for iOS and Android platforms and conduct user experience experiments

Spark! Lab x Global Joy   *Boston, MA*

SOFTWARE ENGINEER AND CONSULTANT

- Develop user interface and major app functions, including Diet, News Feed, and Catalog, in Java/Android Studio collaborating with a team of five for the Health and Fitness start-up company Global Joy
- Hold weekly meetings with clients and design new development strategies to satisfy new customer needs in an agile development environment
- Work on a machine learning algorithm in a team of three to optimize the matching between health coach and customer

Revlon Inc.   *London, UK*

DATA ANALYST SUMMER INTERN   *May 2017 - August 2017*

- Use machine learning algorithms to perform analysis and prediction on both company and industrial financial data
- Conduct multi-factor data analysis with respect to time, location, SKUS, and brand launches to provide retail insights
- Use Python and other data mining and machine learning tools to analyze the macro market and seasonal industrial trends to help strategic planning for future marketing, branding, and product innovation efforts

Research Projects

Augmented Reality and Geometry-Based Physical Stability Properties

LI, YICHEN., WHITING, EMILY., OCHSENDORF , JOHN,   *2019*

- Abstract: Existing techniques for stability analysis and stabilization solutions for priceless art pieces or historical artifacts require complicated hardware setup and time-consuming support design process. In this paper, we present a novel approach by using simple additive manufacturing techniques for model stabilization to help with sculpture conservation. We also integrate Augmented Reality (AR) technology to enable more intuitive user-interaction and visualization, and our platform can be installed on any AR-enabled device, which would allow professionals to work with sculptures. Our platform con-structs mesh of different types of support structures in real-time subjected to user-specified preferences ready to be 3D printed and attached to the object of interest for added stability. We demonstrate that the 3D-printed support structure generated by our model provides the sufficient stability but is a lot faster, cheaper, and more convenient than the state-of-the-art system.

Open-vocabulary Phrase detection

PLUMMER, BRYAN., SHIH, KEVIN., LI, YICHEN., XU, KE., SCLAROFF, STAN., LAZEBNIK, SVETLANA., SAENKO, KATE.

2019

- Abstract: Most existing work that grounds natural language phrases in images starts with the assumption that the phrase in question is relevant to the image, limiting their potential applications. In this paper we address a more open and practical version of the natural language grounding task where we must both localize and identify if the phrase is relevant to an image. This is more akin to the standard ob- ject detection task and can be evaluated in the same way. Our approach to this task uses a Faster R-CNN-style network that has been adapted to relate image regions and phrases. By carefully initializing the clas- sification layers of our network using canonical correlation analysis (CCA), we encourage a solution that is more discerning when reasoning between similar phrases, resulting in over double the performance compared to a naive adaptation. We evaluate our approach on two popular phrase grounding datasets: Flickr30K Entities and ReferIt Game. ArXiv paper: 1811.07212

Honors and Leadership

2018	**College Prize for Excellence in Computer Science**, Boston University	*Boston, MA*
2018	**Summa Cum Laude**, Boston University	*Boston, MA*
2018	**Boston University Arts Initiative Research Award**, Boston University Arts Initiative	*Boston, MA*
2018	**UROP Summer Research Award**, Boston University UROP Program	*Boston, MA*
2014 - 2018	**Dean's List (All Semesters)**, Boston University	*Boston, MA*
2016 - 2018	**Commended Member**, LOCK Honorary Service Society at Boston University	*Boston, MA*
2016 - 2018	**Questrom Member**, Beta Gamma Sigma Honorary Society at Boston University	*Boston, MA*

Academic Projects

Color and Material Augmented Photometric 3D Reconstruction (IP) This project aims to improve the real-time pho- togrammetry precisions of monochrome objects, especially for the sculptures made of clay or marble. The model does so by sampling physical properties of objects including dimension, mate- rial, and color to supervise the reconstruction process. The first step involves a depth-noise-filtered vox- elization of an AR-enabled bounding frustum by combining both surface and color detection misses. The reconstruction precision is further improved with a color-and-material-consistency-augmented shadow carving process. The model will iteratively apply adjustment on the voxel created in the first step from different angles. It uses a set of pre-learned, material-specific properties to minimize the disparity be- tween the re-projection of the reconstructed model in constant color texture wrapper and the actual pho- to taken. The proce- dure uses the presumption that the geometry to reconstruct is of one single color and by using one pre-produced constant colored texture, it manipulate the mesh to approximate the ground truth one.

Stock and Market Indices Prediction (IP) This project aims to compare different methods for stock prediction, con- centrating on the traditional statistical methods using multiple regression, classic economic models such as CAPM and stochastic processes, and the relatively newer machine learning methods including SVM and LSTM models. Specifically, the project experiment with different aspects of stock prediction such as market momentum, market section comparison, and macro trend analysis. We wish to develop more machine learning models that not only utilizes classical financial economic theory as supervision measures but also pick up on humanly-unintelligible reasonings for market fluctuations.

Other Skills and Activities

Media Production and Other	Avid Media Composer, Adobe Creative Suite, Maya, 3Ds Max, Blender
Language Skills	Bilingual proficiency in Mandarin Chinese, Conversational proficiency in French

2016 - 2018	**Volunteer**, Women In CS at Boston University	*Boston, MA*
2016	**VFX and Editor**, Master Thesis Film Projects Produced at Boston University	*Boston, MA*
2015 - 2018	**Volunteer**, Brighton Food Pantry	*Brighton, MA*
2015 - 2018	**Junior Analyst**, Boston University Finance Club	*Boston, MA*
2014 - 2018	**Volunteer**, Massachusetts Production Coalition	*Boston, MA*