# WENHAO ZHANG

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## EDUCATION

**University of California, Los Angeles** • Ph.D. in Computer Science *2017-now*

**University of Southern California** • M.S. in Computer Science *2016-2017*

**University of Southern California** • M.S. in Electrical Engineering *2013-2015*

**Harbin Engineering University** • B.S. in Electrical Engineering *2009-2013*

## PUBLICATIONS AND PROFESSIONAL CONFERENCE

**Large-scale Causal Approaches to Debiasing Post-click Conversion Rate Estimation with Multi-task Learning[C]**
*The Web Conference 2020* *accepted*

**GenSample: A Genetic Algorithm for Oversampling in Imbalanced Datasets**
*arXiv* *preprint*

**WOTBoost: Weighted Oversampling Technique in Boosting for imbalanced learning[C]**
*IEEE BigData 2019 Special session: 5th Special Session on Intelligent Data Mining* *to be appear*

**Combination of Indoor Localization and Wearable Sensor-Based Physical Activity Recognition to Assess Older Patients Undergoing Subacute rehabilitation: Baseline Study Results[J]**
*Journal of Medical Internet Research* *July, 2019*

**Using Smart Watch Sensing in At-Risk Populations (SARP) in a Sub-Acute Rehabilitation Center[A]**
*Archives of Physical Medicine and Rehabilitation* *Dec. 2018.*

## INTERNSHIP

**Research Intern @ Alibaba Group** *July, 2019 - Sep, 2019*
*Highlights: Conversion rate estimation, Causal inference, Multi-task learning, Selection bias*

- Identified the *selection bias* and *data sparsity* issues in conventional conversion rate (CVR) estimation
- Proposed two theoretically unbiased CVR estimators, i.e., Multi-IPW, and Multi-DR, which solves these issues from a causal perspective.
- Evaluated the proposed models on a public dataset and a production dataset (with 10 Billion data samples), and the results reveal that the proposed method outperform the state-of-the-art CVR models.
- Drafted paper "Large-scale Causal Approaches to Debiasing Post-click Conversion Rate Estimation with Multi-task Learning".
- Paper submission has been accepted as a short paper to *The Web Conference 2020*
- Submitted a pre-print version: "https://arxiv.org/pdf/1910.09337.pdf"

## SKILL HIGHLIGHTS

| | |
|---|---|
| **Development Languages** | Python(Proficient), Java(Proficient), C, C++, OCaml, Scheme, Prolog, SQL, JavaScript |
| **Development Platform** | Google Cloud Platform, Amazon Web Service, Tensorflow, Pytorch, Hadoop |
| **Tools** | Emacs, Vim, Matlab, Eclipse, Android Studio, Linux, Node.js, Git, Unix, Visio |

## OPEN-SOURCE CONTRIBUTION

**Contributions to Scikit-learn** *June, 2018 - July, 2018*
*Highlights: Python, open-source contribution, model selection, Scikit-learn*

- Solved the compatibility issue with python 3.7.0b5 in version 0.19.2 (Merged pull request #11256)
- Added a new interface in model selection module (sklearn.model_selection) in version 0.21.0. This feature adds more flexibility in identifying the best estimator. (Merged pull requestion #11354)

**Contributions to wkdict** *Jan, 2019 - Feb, 2019*
*Highlights: Python, open-source contribution, translation tool*

· Published a dictionary app that sits in CLI enviroment, *https://pypi.org/project/wkdict/*

## TEACHING ASSISTANT SERVICE

**TA services at University of California, Los Angeles (UCLA)**

Course **"Programming Languages"**(CS131) with Prof. Paul Eggert in Spring, 2019

Course **"Programming Languages"**(CS131) with Prof. Paul Eggert in Winter, 2019

Course **"Intro to Algorithms and Complexity"**(CS 180) with Prof. Majid Sarrafzadeh in Fall, 2018

**TA service at University of Southern California (USC)**

Course **"Internet and Cloud Computing"**(EE 542) with Prof. Kai Hwang in Summer, 2017

Course **"Wireless Internet and Pervasive Computing"**(EE 532) with Prof. Kai Hwang in Spring, 2017

## SELECTED RESEARCHES & PROJECTS

**Large-scale causal approaches to debiasing post-click conversion rate estimation** *Jul. - Oct., 2019*
*Highlights: CVR estimation, selection bias, causal inference, tensorflow*

· Identified the *selection bias* and *data sparsity* issues in conventional conversion rate (CVR) estimation
· Proposed two theoretically unbiased CVR estimators, i.e., Multi-IPW, and Multi-DR, which solves these issues from a causal perspective.
· Evaluated the proposed models on a public dataset and a production dataset (with 10 Billion data samples), and the results reveal that the proposed method outperform the state-of-the-art CVR models.

**Data Analytic in Sensing at Risk Population (SARP) Project** *Oct., 2017 - now*
*Highlights: Data Analytic, Machine Learning, Data Visualization, Python, R*

· Conducted a baseline analysis of combining indoor localization and wearable sensor-based physical activity recognition to assess older patients in Berkeley East rehab.
· Conducted a longitudinal analysis to understand the improvement pattern of the geriatric population with sensor-based physical recognition and clinical records.

**Machine learning with imbalanced data** *Apr. -Aug., 2018*
*Highlights: Ensemble learning, SMOTE, oversampling, undersampling*

· Proposed an ensemble learning algorithm with a combination of oversampling and undersampling technique for learning from imbalanced dataset.
· Tested the proposed algorithm on 18 imbalanced datasets, and compared the classification results with other well-known algorithms.

**Speaker Recognition for Dialogue system** *Oct, 2016 - Nov, 2016*
*Highlights: Natural Language Processing, Machine Learning, Multi Layer Perceptron Classifier,Speaker Recognition*

· Goal: Identify the speaker from the dialogue text in TV drama transcript corpus
· Preprocessed the corpus of "The Big Bang Theory" transcripts by removing stop words, lemmatization,splitting each episode into sequence of scenes.
· From the preprocessed dataset, extracted several useful features such as, Bag of words, POS tags, and so on.
· Created input feature vector for Multi Layer Perceptron classifier.
· Trained the classifier and tuned the parameters to improve the performance.

## MAJOR AWARDS AND HONORS

Outstanding Students of Harbin Engineering University *2012/09/19*

Zhongji Social Scholarship by Zhongji Company *2012/09/19*

Sino-Pacific Social Shcolarship 2011/09/29

Outstanding Volunteer in Harbin Engineering Universitys 2011/04/06

1st-Level scholarship of Harbin Engineering University 2011/03/18