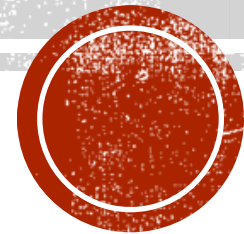# INTRODUCTION TO KAI-WEI CHANG

--- by Wei Da and Haiyang Qi

Assistant professor in the department of Computer Science at UCLA 2017 –

Assistant Professor, the Computer Science Department at the UVA 2016-2017

Post-doc at MSR at New England

Phd. CS Department of UIUC supervised by Dan Roth

General Research Area: machine learning, natural language processing, artificial intelligence, and data mining

H-index : 18

Citations: 7724

Research Areas and Topics

"Research goal is to build intelligence systems that solve real-world problems by automatically acquiring knowledge. "

Machine Learning Theory :
 Binary Classification:
    Coordinate descent method for large-scale L2-loss linear SVM. JMLR, 2008.
    A sequential dual method for large scale multi-class linear SVMs. KDD, 2008
    A dual coordinate descent method for large-scale linear SVM. ICML, 2008
    Iterative scaling and coordinate descent methods for maximum entropy. JMLR, 2010

 Structured Prediction:
    Multi-core structural svm training. ECML, 2013
    Structural learning with amortized inference. AAAI, 2015
    Learning to search better than your teacher. ICML, 2015
    A credit assignment compiler for joint prediction. NIPS, 2016

 Software and library package:
    LIBLINEAR , Vowpal Wabbit.

Research Areas and Topics

Natural Language Processing:

 Coreference Resolution:

　　　A constrained latent variable model for coreference resolution. EMNLP, 2013

 Grammar Correction:

　　　The university of illinois system in the conll-2013 shared task. CoNLL Shared Task, 2013
　　　The illinois-columbia system in the conll-2014 shared task. CoNLL Shared Task,2014

 Vector Space Models:

　　　Multi-relational latent semantic analysis. EMNLP, 2013

 Word Embding ,Parsing and Phrases:

　　　Structured prediction with test-time budget constraints. AAAI, 2017
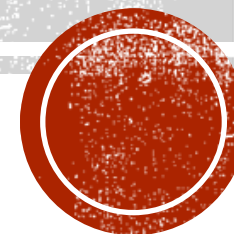　　　Learning to suggest phrases. In AAAI workshop on Human-Aware Artificial Intelligence, 2017.

 Text Mining:

　　　Men Also Like Shopping: Reducing Gender Bias Amplification using Corpus-level Constraints.
EMNLP, 2017

MEN ALSO LIKE SHOPPING: REDUCING GENDER BIAS AMPLIFICATION USING CORPUS-LEVEL CONSTRAINTS

Jieyu Zhao, Tianlu Wang, Mark Yatskar,
Vicente Ordonez, Kai-Wei Chang

OUTLINE

- 1.Background

- 2.Dataset Bias

- 3.Bias Ampification

- 4.Reducing Bias Amplification

IMSITU VISUAL SEMANTIC ROLE LABELING(VSRL)

COOKING	
ROLES	**NOUNS**
AGENT	woman
FOOD	vegetable
CONTAINER	pot
TOOL	spatula

COCO MULTI-LABEL CLASSIFICATION(MLC)

WOMAN	
PIZZA	yes
ZEBRA	no
FRIDGE	yes
CAR	no
…	…

- A Woman is smiling in a kitchen near pizza on the stove

Training Set

◆ cooking

● woman

● man

COOKING	
ROLES	NOUNS
AGENT	woman
FOOD	stir-fry

COOKING	
ROLES	NOUNS
AGENT	man
FOOD	noodle

$$\frac{\#(\blacklozenge \text{ cooking}, \bullet \text{ man})}{\#(\blacklozenge \text{cooking}, \bullet \text{man}) + \#(\blacklozenge \text{ cooking}, \bullet \text{woman})} = 1/3$$

Training Set

▲ snowboard

● woman

● man

MAN	
snowboard	yes
refrigerator	no
bowl	no

WOMAN	
snowboard	yes
refrigerator	no
bowl	no

$$\frac{\#(\blacktriangle \text{snowboard}, \bullet \text{man})}{\#(\blacktriangle \text{snowboard}, \bullet \text{man}) + \#(\blacktriangle \text{snowboard}, \bullet \text{woman})} = 2/3$$

DEFINING BIAS AMPLIFICATION(EVENTS)

$$\frac{\#(\blacklozenge \text{ cooking} , \bullet \text{ man})}{\#(\blacklozenge \text{cooking} , \bullet \text{ man}) + \#(\blacklozenge \text{ cooking} , \bullet \text{woman})} = 1/6$$
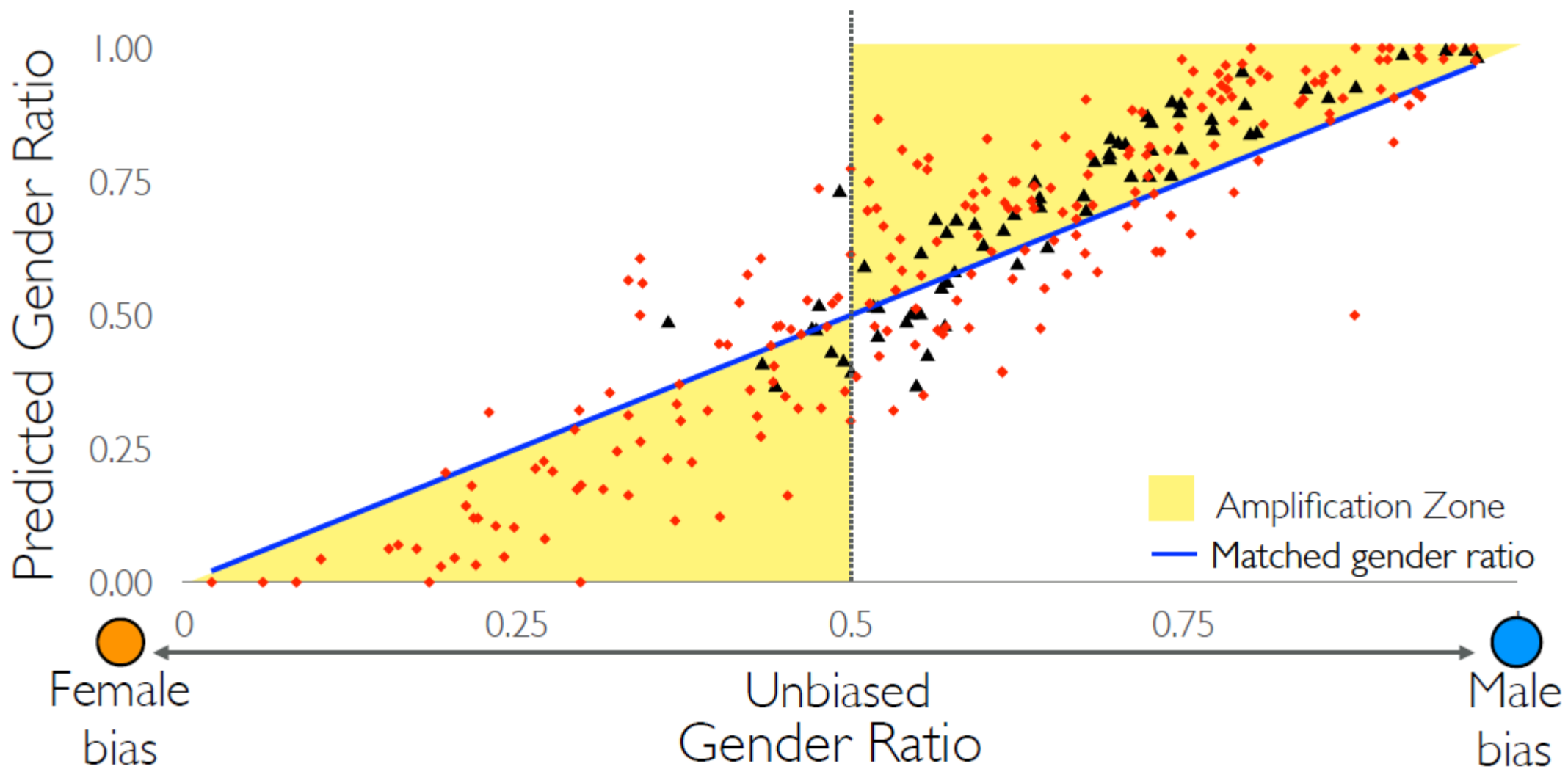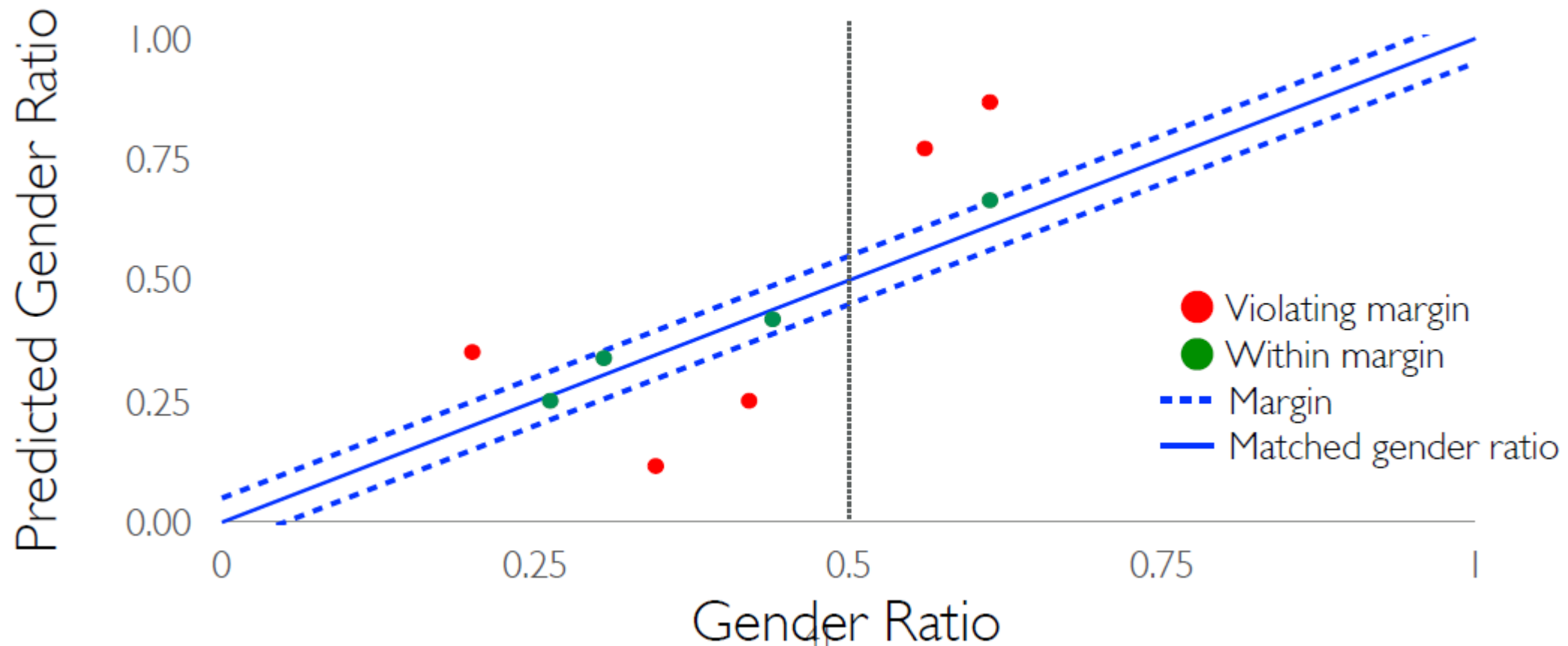
CONTRIBUTIONS

- High dataset gender bias 38%(objects)47%(events)exhibit strong bias

- Module amplify existing gender bias - 70% objects and events have bias amplification

- Reducing bias amplification 50%reduction in amplification