
Education

- 2014–2018 **Ph.D., Computer Science**, *University of Kentucky*, Lexington, KY.
Researched and developed novel computer vision algorithms using deep learning to understand the relationship between human appearance, scene, and geographic location.
Dissertation: “Modeling and Mapping Location-Dependent Human Appearance.”
- 2012–2013 **M.S., Computer Science**, *Western Kentucky University*, Bowling Green, KY, GPA: 4.0/4.0.
Thesis: “An Automatic Framework for Embryonic Localization Using Edges in a Scale Space”
- 2007–2011 **B.S., Computer Science**, *Western Kentucky University*, Bowling Green, KY, major GPA: 3.8/4.0.
Minor in Mathematics

Experience

- Jan. 2019 – **Applied Scientist**, *Zillow Group*, Seattle, WA.
Present
 - Contributed to improving Zillow’s home automated valuation model (AVM), the Zestimate.
 - Improving on and developing novel AVMs for Zillow Offers.
- Oct. 2017 – **Data Scientist Intern**, *Zillow Group*, Seattle, WA.
Feb. 2018
 - Developed convolutional neural network (CNN) models that use images to improve the Zestimate.
- Jun. 2014 – **Teaching/Research Assistant**, *University of Kentucky*, Lexington, KY.
Dec. 2018
 - Advisor: Dr. Nathan Jacobs.
 - TA for CS221, “First Course in Computer Science for Engineers.” MATLAB programming.
- Jul. 2013 – **Software Developer**, *Publishers Printing Co.*, Shepherdsville, KY.
Jun. 2014
 - Developed/maintained Java-based software, PICA – Publishers Information and Costing Analyzer
 - Enhanced Book Mapping module using Spring with Hibernate persistence for AS/400 and MS SQL
 - Performance optimizations for Swing components and miscellaneous additions across all modules
 - Improved synchronization efficiency when updating jobs, particularly in the Book Mapping module
- Jun. 2011 – **Undergraduate/Graduate Teaching/Research Assistant**, *Western Kentucky University*, Bowling Green, KY.
May 2013
 - NSF IIS: “Automatic Framework for Processing Drosophila Embryonic Images”, PI: Dr. Qi Li
 - Designed and implemented algorithms for automatically extracting embryonic contours
 - Taught labs and graded assignments for Computer Science I & II (CS 180 & 181)

Publications

- [1] X. Wang, G. Liang, Y. Zhang, H. Blanton, **Z. Bessinger**, and N. Jacobs. Inconsistent performance of deep learning models on mammogram classification. *Journal of the American College of Radiology (JACR)*, 2020.
- [2] **Z. Bessinger** and N. Jacobs. A Generative Model of Worldwide Facial Appearance. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2019.
- [3] M. Zhai, **Z. Bessinger**, S. Workman, and N. Jacobs. Predicting Ground-Level Scene Layout from Aerial Imagery. In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.
- [4] **Z. Bessinger**, C. Stauffer, and N. Jacobs. Who Goes There? Approaches to Mapping Facial Appearance Diversity. In *ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*. ACM, 2016.

- [5] **Z. Bessinger** and N. Jacobs. Quantifying Curb Appeal. In *IEEE International Conference on Image Processing (ICIP)*. IEEE, 2016.
- [6] R. Mihail, S. Workman, **Z. Bessinger**, and N. Jacobs. Sky Segmentation in the Wild: An Empirical Study. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*. IEEE, 2016.
- [7] **Z. Bessinger**, G. Xing, and Q. Li. Localization of Drosophila embryos using connected components in scale space. In *IEEE International Conference on Image Processing (ICIP)*, pages 497–500. IEEE, 2012.
- [8] Q. Li and **Z. Bessinger**. Learning scale ranges for the extraction of regions of interest. In *IEEE International Conference on Image Processing (ICIP)*, pages 2581–2584. IEEE, 2012.

Technical Experience

Proficient With

Languages Python, MATLAB, Java
Technologies Numpy, Pandas, Scikit-learn, PyTorch, Tensorflow, Matplotlib, IntelliJ IDEA, Apache Spark, Git

Have Experience With

Languages Android, C, C++, Javascript
Technologies Android Studio, Spring, Bootstrap, Visual Studio

Honors & Awards

Fellowships 2014–2016 – University of KY Teaching Assistantship
Awards 2017 – CVPR Student Volunteer
2013 – Ogden College Outstanding Graduate Student Award in Computer Science
2013 – Ogden College Outstanding Graduate Research Student Award (honorable mention)

Activities

2014–2015 **OpenLexington**, Lexington, KY.
OpenLexington is a Code for America brigade whose goal is to provide data visualization/access to the public.

2012–2013 **Android Development Group**, *Western Kentucky University*, Bowling Green, KY.
Coordinated a weekly meeting group that taught students the basics of Android software design.

2008–2013 **ACM Local Chapter**, *Western Kentucky University*, Bowling Green, KY.
Gave presentations on how to improve programming skills and invited guest speakers from local companies to present.