

# Bin Kong | CS

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## Education

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**University of North Carolina at Charlotte**

8/2015 – Present

Ph.D. in Computer Science

**Xi'an Jiaotong University**

9/2012 – 7/2015

M.S. in Mechanical Engineering

## Research Interests

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Deep Learning, Computer Vision, Medical Image Analysis, Machine Learning

## Research Experience

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**Coronary Artery Segmentation from 3D Cardiac CTA**

Guide: Dr. Xin Wang, CuraCloud Corporation

5/2018 – Present

- Developed a novel tree-structured ConvLSTM layer for high-dimensional data understanding
- Proposed an FCN and tree-structured ConvLSTM based framework for tree-structured image segmentation
- Employed spatial attention to boost the segmentation performance
- [AAAI'19] under review

**Invasive Cancer Detection in Whole-Slide Images**

Guide: Dr. Shanhui Sun, Dr. Xin Wang, CuraCloud Corporation

6/2016 - Present

- Developed a novel CNN and 2D LSTM based framework to leverage the spatially structured information
- Designed an efficient invasive cancer detection framework with transfer learning and compressed network
- [MICCAI'18] early acceptance, [IPMI'17], one pending patent

**Recognizing ES and ED Frames from Cardiac MRI Sequences**

Supervisor: Dr. Shaoting Zhang, VIA Lab, UNC Charlotte

9/2015 – 4/2016

- Proposed a CNN and LSTM based framework for End-Diastole (ED) and End-Systole (ES) frame detection
- Designed a novel loss to constrain the predictions
- [MICCAI'16]

**Color Correction and Stitching of High Resolution Images**

Supervisor: Dr. Suping Fang, Xi'an Jiaotong University

9/2012 – 7/2015

- Developed a SIFT feature based high resolution image stitching framework
- Developed a color registration system for high resolution images

**Registration, Stitching, and Enhancement of X-ray Images**

Guide: Dr. Tian Shen, Hwatech Corporation

7/2013 – 9/2013

- Proposed a barycenter based registration system for mamography image registration
- Developed Multi-Scale Image Contrast Amplification (MUSICA) system for X-ray image enhancement
- Employed mutual information for X-ray image stitching
- Two patents (CN 201310731754 and CN 201310732363)

## Skills

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- **Programming Languages:** C/C++, Python, Matlab
- **Platform:** Linux
- **Deep Learning Frameworks:** PyTorch, TensorFlow, Caffe

## Awards

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- CuraCloud Outstanding Deep Learning Research Award, *CuraCloud Corporation* 8/2018
- Thomas L. Reynolds Graduate Student Research Award, *UNC Charlotte* 4/2018
- Research Assistant Scholarship, *UNC Charlotte* 8/2018 – Present

## Publications

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- 1 **Bin Kong**, Shanhui Sun, Xin Wang, Qi Song, and Shaoting Zhang. Invasive cancer detection utilizing compressed convolutional neural network and transfer learning. In *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, pages 156–164. Springer, 2018.
- 2 **Bin Kong**, Xin Wang, Zhongyu Li, Qi Song, and Shaoting Zhang. Cancer metastasis detection via spatially structured deep network. In *International Conference on Information Processing in Medical Imaging (IPMI)*, pages 236–248. Springer, 2017.
- 3 **Bin Kong**, Yiqiang Zhan, Min Shin, Thomas Denny, and Shaoting Zhang. Recognizing end-diastole and end-systole frames via deep temporal regression network. In *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, pages 264–272. Springer, 2016.
- 4 Xieliu Yang, Suping Fang, **Bin Kong**, and Yichao Li. Design of a color coded target for vision measurements. *Optik-International Journal for Light and Electron Optics*, 125(14):3727–3732, 2014.