# Zhenzhen DAI

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## EDUCATION

**University of Michigan, Ann Arbor, MI**

*Master of Science in Biomedical Engineering* *Apr 2017*

GPA：3.93/4.0

**Dalian University of Technology, Dalian, China**

*Bachelor of Engineering in Biomedical Engineering* *Sept 2015*

GPA：3.83/4.0

## EXPERIENCE

**Ann Arbor Algorithms Inc. Ann Arbor, MI**

*Deep Learning Intern* *Aug 2017 – Present*

- Extracted, transformed and imported medical imaging data (90G) into deep learning platform. Implemented PCA and image segmentation algorithm to ensure rotation invariant.
- Performed cell segmentation by applying fully convolutional neural network(FCN) using Python.
- Applied Deep Residual Network for diseases classification. Demonstrated performances of 98% on two-class identification.
- Performed 3D reconstruction for retinal structure.

**Department of Gastroenterology, Division of Internal Medicine, University of Michigan, Ann Arbor, MI**

*Research Assistant* *May 2016 – Aug 2011*

- Developed image processing algorithms using MATLAB for colorectal cancer segmentation.
- Conducted hypothesis testing of the imaging performance using R and MS Excel.
- Validated clinical application of a multimodal endoscope with fluorescent peptide in detection of colorectal neoplasia with diagnostic sensitivity of 89% and specificity of 92% at T/B ratio of 1.16

## PROJECTS

**National Training Program for Innovation and Entrepreneurship, Dalian, China**

*Team leader* *Mar 2014 – Jun 2015*

- Led a research team, generated and tracked schedule to ensure the program executed on time
- Developed Brain-computer-interface (BCI) algorithm based on Common Spatial Pattern (CSP) and SVM using MATLAB.
- Trained BCI system to classify brain motor imaginary activity with idle state, and measured accuracy of 90% for 2 classes of classification and 78% for 3 classes of classification.
- Developed robot system using C++, established brain controlled robot system and validated the system with 67% motion accuracy.

**Department of Electrical Engineering & Computer Science, University of Michigan, Ann Arbor, MI**

*Video Segmentation* *Mar 2017 – Apr 2017*

- Implemented 2 generative adversarial networks for video object segmentation using Python.
- Evaluate the network on DAVIS challenge dataset.

*Semantic Segmentation* *Feb 2017 – Mar 2017*

- Established fully convolutional neural network for per-pixel dense prediction using Python.
- Achieved good semantic segmentation result of PASCAL VOC with 90% pixel accuracy.

*Human Pose Estimation* *Jan 2017 – Feb 2017*

- Implemented deformation cost function for efficient matching for natural class of pictorial structure.
- Estimated upper body pose (head, torso, upper/lower right/left arms).

*Image Registration* *Nov 2016 – Dec 2016*

- Designed a computer vision system to play the game 'Spot It' whose aim is to discover the same item on each pair of card
- Implemented Scale-invariant feature transform (SIFT) for object recognition with 90% - 100% matching accuracy

**Department of Electrical Engineering & Computer Science, University of Michigan, Ann Arbor, MI**

*Image Processing* *Mar 2016 – Apr 2016*

- Implemented 3 proposed TV-based image restoration algorithm by applying linear filtering and soft threshold
- Evaluated the algorithm by PSNR and SSIM analysis with 3 different blur kernels under 6dB, 12dB and 20 dB SNR level
- Analyzed the effect of regularization parameter, number of directions of gradient and computation efficiency

## SKILLS

- Software: Microsoft Office/Photoshop, Visio/Quatus II, Multisim
- Programming: Python, R, MATLAB, C/C++, VHDL, Labview

## PUBLICATION

- Joshi BP, Dai Z, Gao Z, Lee JH, Ghimire N, Chen J, Prabhu A, Wamsteker EJ, Kwon RS, Elta GH, Stoffel EM, Pant A, Kaltenbach T, Soetikno RM, Appelman HD, Kuick R, Turgeon DK, Wang TD, Detection of Sessile Serrated Adenomas in Proximal Colon Using Wide-field Fluorescence Endoscopy, Gastroenterology (2017), doi: 10.1053/j.gastro.2016.12.009.