

---

## SUMMARY

### • To obtain a fulltime position working as a Software Engineer starting summer 2019

Self-motivated and highly talented Ph.D. Candidate, strong background in Object Oriented Programming, Data Analysis, Machine/Deep Learning, and Image Processing. Great communication skills and abundant teamwork experience.

---

## EDUCATION & SELECTED AWARDS

### University of California, Berkeley

M.S. (2013-2015) and Ph.D. (2015-2019) in Mechanical Engineering

*The J. K. Zee Fellowship (2015), Signatures Innovation Fellows (2017-2018), SB3C Ph.D. paper COMP finalist (2017).*

8/2013-now

**GPA: 3.96/4.0**

### Dalian University of Technology

B.S. in Naval Architecture and Ocean Engineering

9/2009-6/2013

**GPA: 4.0/4.0**

---

## WORKING EXPERIENCE

### ■ Internship at TianMing Data Science Technology

**2017 Winter**

– Developed deep convolutional neural network (CNN), including resnet and densenet, to conduct pneumoconiosis diagnosis using chest x-ray images. Related skills included artificial intelligence (AI) and distributed algorithm.

– Developed Python classes and scripts for medical image analysis.

– Developed algorithms for data augmentation and checking label quality.

– Developed deep CNN models using mxnet and gluon and deploy them for inference (80%+ accuracy).

### ■ Graduate Student Instructor (GSI) 5 times at UC Berkeley

**2013-2018**

– Including one semester **Lead GSI** of a 260-student MATLAB programming class (Engineering 7).

– **Lead 6 other GSIs** to prepare and grade homeworks and exams, give lab sessions, and hold office hours.

---

## RESEARCH AND PROJECTS

### ■ Implementation of a Database in Java

**Spring 2018**

– Implemented persistent B+ trees that mapped keys to records.

– Implemented table, page, and record iterators.

– Implemented join algorithms over tables including Page/Block Nested Loop Join, and Sort Merge Join.

– Cost estimation, maintenance of statistics, and query optimization using System R dynamic programming

– Developed a Lock Manager to implement table and page-level locking

### ■ Application of CNN to Medical Image Detection and Segmentation ( <https://youtu.be/U7yk9PYwnA4> )

**2017**

– Obtained 1082 slices of 256×256-resolution MRI scans of bovine intervertebral disc (Bruker 7T).

– Preprocessed images: rotated and transposed images to enlarge total data amount, and labeled each pixel.

– Improved image classification and segmentation task accuracy drastically to 97%.

### ■ Parallelized transformation from 3D Matrix to Voxel Mesh

**2017**

– Developed an algorithm in C++ that was  $O(n)$  complexity.

– Paralleled C++ code using Cuda GPU.

– Paralleled C++ code using MPI IO (6 × speed up).

---

## SELECTED PUBLICATIONS

**Yang, B.** and OConnell, G.D., 2018. Swelling Behavior of Fiber-Reinforced Soft Tissues is Affected by Fiber Orientation, Fiber Stiffness, and Lamella Structure. *Journal of the Mechanical Behavior of Biomedical Materials*.

**Yang, B.** and OConnell, G.D., 2017. Effect of collagen fibre orientation on intervertebral disc torsion mechanics. *Biomechanics and modeling in mechanobiology*. 16(6):2005-15.

**Yang B**, Lu Y, Um C, OConnell GD. Nucleotomy Increases Disc Bending Stiffness under Complex Loading Modalities. Abstract for **Ph.D. Paper Competition** World Congress of Biomechanics Meeting, Dublin, Ireland, 07/2018.

---

## SKILLS

Proficient in Java, Python, SQL, MATLAB.

Knowledgeable in HTML/CSS and C++.

---

## SELECTED COURSES

CS 61B Data Structure (A+)

CS 267 Applications of Parallel Computers (A)

CS 289A Introduction to Machine Learning (Pass)

CS 286A Introduction to Database System (A)

CS 294-131 Deep learning Special Topics: Deep Learning (Pass)

EE 128 Feedback Control System (A+)