

## Education

### PhD | Mechanical Engineering

Rensselaer Polytechnic Institute (RPI)  
2012-2019

- GPA: 3.65
- Research: Scientific data analysis; Machine learning; Artificial intelligence; Statistical Analysis; Tissue properties; Burn classification

- Advisor: Suvranu De

### BEng | Civil Engineering

Wuhan University | 2008-2012

## Technical Skills

### Programming languages

SQL • Python • R • C++ • C • html

bash • FORTRAN

### Machine learning

Software:

Matlab • SPSS • Minitab • TensorFlow

G\*Power • Microsoft Excel

Open source frameworks:

Pandas • SciPy • NumPy • Matplotlib

Scikit-learn

Algorithms:

SVM • PCA / LDA • Clustering

Regression • Feature selection

Classification Model validation •

Hypothesis testing

### General

Tableau • Git • Jupyter • Linux • Mac

NX • Abaqus • COMSOL • Microsoft

Office Tools (PowerPoint, Word,

Outlook) • Latex

## Coursera Certifications

Databases and SQL for Data Science

Python for Data Science and AI

Data Analysis with Python

Open Source tools for Data Science

What is Data Science?

Fundamentals of Visualization with

Tableau

## Language Skills

English, Chinese Mandarin and

Cantonese



## Experience

### Graduate Research Assistant | RPI (Aug. 2012 - May 2019)

- Project 1: Burn degree classification with machine learning
  - Achieved 92- 99% accuracy in classifying different burn severities for burnt skins, using the ultrasound image, Raman spectra data with machine learning algorithms (SVM, PLS, etc.) and feature selection.
  - Overcame the problem of ultrasound images not being able to differentiate between tissues with various levels of burns
  - Led the collaboration with researchers and surgeons from University at Buffalo and Erie County Medical Center
- Project 2: Classification of bio- materials
  - Statistically revealed a significant difference between the real skin tissues and the man-made skin substitutes, using Force-Displacement data, which led to a ~\$1M collaborative project between our lab and the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC)

## Publication and Talks

### Journal Articles

- Burn-related Collagen Conformational Changes in *ex vivo* Porcine Skin using Raman Spectroscopy. Ye, H. *et al.* 2019. *Scientific Reports* (Accepted)
- Ultrasound elastography reliably identifies altered mechanical properties of burned soft tissues. Ye, H. *et al.* 2018. *Burns* 
- Thermal injury of skin and subcutaneous tissues: A review of experimental approaches and numerical models. Ye, H. and De, S. 2017. *Burns* 
- Classification of Burn Severities with Raman Spectroscopy on *ex vivo* Porcine Skin. Ye, H. *et al.* (Under review)
- Ultrasound imaging-based machine learning approach to identify altered characteristics of burned tissue in real time. Lee, S., Ye, H., *et al.* (Under review)

### Conference Presentations

- Annual Conference and Exposition on Experimental and Applied Mechanics, 2019
- 14<sup>th</sup> US National Congress on Computational Mechanics (USNCCM14), 2017
- Military Health System Research Symposium (MHSRS), 2017

## Awards and Recognitions

- Third Rank of People's Scholarship of Wuhan University
- Merit Student of Wuhan University
- First Prize of the National Scholarship of Wuhan University

## Teaching and Mentoring Experience

- Graduate Teaching Assistant at RPI (5 Semesters)
- Undergraduate Research Program (URP) mentor at RPI

## Other activities

- \$1400 award winning adventure game (AVG) developer (2017)
- Internship at Three Gorges Dam hydroelectric system (2011)
- Active member of Society of Women Engineers (SWE) and Chinese Students and Scholars Association (CSSA) in RPI