

HE (RICHARD) ZHAO

1415 Sherman Ave Apt 507, Evanston IL 60201

◇ (574) 516-2241 ◇ he.zhao@northwestern.edu ◇ hzhao1230.github.io

EDUCATION

Northwestern University, Evanston, IL (GPA: 3.92/4.00) Jun. 2017
Ph.D, Mechanical Engineering
M.S., Computer Science

University of Notre Dame, Notre Dame, IN May 2012
B.S., Aerospace Engineering

COURSEWORK AND PROFESSIONAL SKILLS

Programming Python, Java, C++, MATLAB, UNIX Shell, HTML/CSS, SQL, JavaScript, R, SAS
Platforms Amazon Web Services, CentOS, Debian, MongoDB, MySQL, Django, Git, Node.js, AngularJS
Deep Learning Caffe, TensorFlow, Lasagne
Courses Algorithms, Database, Data Structure, Machine Learning, Deep Learning, Numerical Optimization
Computer Vision, Artificial Intelligence, Social Media Mining, Statistical Pattern Recognition

PROFESSIONAL EXPERIENCE

SkinIO Jun. 2016 – Present
Software Engineer Chicago, IL

- Design and implement a Python machine learning module for skin cancer image analysis at a biotech startup
- Apply transfer learning with convolutional neural network in Caffe with 90.4% skin lesion classification accuracy
- Work within DevOps team to deploy machine learning component using AWS EC2 and Elastic Beanstalk
- Develop data collection workflow using AWS DynamoDB and Elastic BeanStalk in an AngularJS web app
- Improve data-driven feature extractions from temporal full-body computer vision analysis using OpenCV

NanoMine (nanomine.northwestern.edu) Sept. 2015 – Present
Lead Developer Evanston, IL

- Lead a multi-agency team of 10+ on data collection, software development, user outreach and academia publications
- Develop a web-based data resource and community for polymer composite materials research using Python/Django
- Design XML schema and data collection workflow using MongoDB and RESTful API in a Python app
- Implement statistical analysis and physics-based simulations as Django web apps and connect with database engines

RESEARCH EXPERIENCE

Advanced Materials Lab, Northwestern University Sept. 2012 – Present
Graduate Research Assistant Evanston, IL

Thesis title: *Data-driven Analysis and Modeling of Polymer Nanocomposite Properties*

- Apply statistical and transfer learning models in Python and Caffe with image analysis in MATLAB to capture and quantify geometric features from material micrograph images for property optimization and material design
- Develop a NoSQL database system that archives materials data from literature and lab sources. Design XML schema and Django web app to store, index and curate collected data
- Develop a web app that extracts and analyzes text, image and binary objects from online academia journal publishers and Google Scholar using Python Beautiful Soup, gensim and matplotlib
- Design and implement an inverse regression-based heuristic model coupled with physics-based finite element modeling for nanocomposite materials mechanical and dielectric property prediction with ABAQUS and COMSOL