Hy (Gia) Dang

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EDUCATION

Texas Christian University **Fort Worth, TX**
College of Science and Engineering, John V. Roach Honors College
Bachelor of Science in Computer Science December 2021
Bachelor of Science in Mathematics December 2021
GPA: 4.0/4.0

RESEARCH EXPERIENCE

Stock Movement Prediction **Fort Worth, TX**
Texas Christian University December 2020 - Present
- Apply Recurrent Neural Network to predict the movements of stock using historical information
- Build an architecture to capture valuable representations of information from the Twitter dataset
- Build a Machine Learning architecture combining historical and textual information for stock movement prediction problem

Mechanics And Manipulation Of Active Structures **Ithaca, NY**
Summer Undergraduate Research Programs, Cornell University June 2020 – August 2020
- Analyzed the mechanical properties of deformable structures using techniques from optimization and dynamical systems theory
- Developed methods for how the structures should alter their shape to achieve the desired goal
- Derived conditions that the particle-ring system must satisfy to be in static equilibrium by using methods from optimal control theory and considered the bifurcations that can occur as the interaction strength between the particles increases ("Bifurcations of an elastic ring with interacting particles" project)

Wound Healing Modeling Using PDE And Deep Learning **Fort Worth, TX**
Texas Christian University June 2019 - Present
- Solve a partial differential equation (PDE) that models wound healing by treating keratin as a diffusion process using approximation methods
- Develop and build automated algorithm to find the appropriate initial conditions and adapt various Deep Learning models (UNet, Res-UNet, Mask-RCNN) to accurately extract information from images
- Combine both numerical PDE and Deep Learning techniques in an automated system to predict the long-term behavior of wound healing

Image-based Vehicle Re-identification Research **Fort Worth, TX**
Texas Christian University January 2020 – March 2020
- Worked as a team member for "Image-based Vehicle Re-identification Model with Adaptive Attention Modules and Metadata Re-ranking" project to adopt the GLAMOR, pre-trained Detectron2 into vehicle re-identification problem
- Reviewed and analyzed different models, approaches from research papers about vehicle re-identification
- Analyzed the dataset, clustered cars into different factors such as colors, car types

Housing Price Prediction Research **Fort Worth, TX**
Texas Christian University April 2019 – November 2019
- Predicted the housing prices of Beijing (China) using Machine Learning and Deep Learning
- Examined different Machine Learning methods for the problem

Exploration Of Representation Theory Research **Fort Worth, TX**
Texas Christian University February 2019 – October 2019
- Derived the patterns of an abstract algebraic group and built a program to identify the groups based on characteristics
- Learned different characteristics and properties of groups

PUBLICATIONS & PRESENTATIONS

- **(Preprint) Dang, H.**, Richardson, K. (2021). Wound Healing Modeling Using Partial Differential Equation and Deep Learning. *arXiv preprint arXiv:2111.15632,* under review.
- **Dang, H.** (2021). Wound Healing Modeling Using Partial Differential Equations And Deep Learning. *Student talk at the Sixteenth Annual Texas Undergraduate Mathematics Conference.*
- **Dang, H.** (2021). Wound Healing Process Modeling Using Partial Differential Equations And Deep Learning. *Student talk presented at the Student Research Symposium.*
- Ruelas, B., **Dang, H.**, Nguyen, M., Dao, T., Dhamo, D. (2021). Truck Detection Using Deep Learning. *Poster session presented at the Student Research Symposium.*
- **Dang, H.** Modeling Wound Healing Using Deep Learning. (2020). *Poster session presented at the 3rd Annual Meeting of the SIAM Texas-Louisiana Section.*
- **Dang, H.**, Mantilla, L., Zhang, W. (2020). Bifurcations of an elastic ring with interacting particles. *Poster session presented at the Canadian Undergraduate Mathematics Conference.*
- **Dang, H.**, Mantilla, L., Zhang, W. (2020). Bifurcations of an elastic ring with interacting particles. *Student talk at the Canadian Undergraduate Mathematics Conference.*
- Truong, Q., Nguyen, M., **Dang, H.**, Mei, B. (2020). Housing Price Prediction via Improved Machine Learning Techniques. *Procedia Computer Science* 174:433-442.

PROFESSIONAL EXPERIENCE

Department of Computer Science, Texas Christian University **Fort Worth, TX**
Technical Lead, Senior Design Course September 2020 - March 2021
- Led a team in Senior Design Course at Texas Christian University working on the truck detection project at Fort Capital
- Applied different Deep Learning models including UNet, Res-UNet, pre-trained Mask-RCNN on truck segmentation problem from satellite images
- Applied traditional Machine Learning methods to the sales prediction problem

Knorex Pte. Ltd **Ho Chi Minh, Viet Nam**
Research Scientist Intern (AI & NLP) August 2020 - February 2021
- Used Word2Vec, fastText to improve bid phrase generation
- Processed returned seed words from Google API Targeting Services
- Applied various traditional Machine Learning and Deep Learning techniques to solve Call To Action (CTA) prediction problem
- Analyzed the creative dataset including structures and the relationships between components

FPT Software **Da Nang, Viet Nam**
Machine Learning Intern May 2019 – July 2019
- Predicted stock prices using historical dataset by implementing Machine Learning methods
- Processed customer data using Tensorflow and scikit-learn

Effective Technology Education Joint Stock Company **Da Nang, Viet Nam**
Machine Learning Research Assistant May 2019 – July 2019
- Calculated the levels of satisfaction of students when enrolling in a course at the education center
- Taught students at the education center about Machine Learning (Linear Regression, KNN, SVM) and how to process the data using scikit-learn, Tensorflow

Texas Christian University **Fort Worth, TX**
Teaching Assistant - Grader, Computer Science Help Desk Assistant Spring 2018 – Present
- Grade and provide constructive feedback on student homework in Mathematics courses: Calculus I-III, Discrete Mathematics I-II, Differential Equations, Linear Algebra
- Grade and provide constructive feedback on student homework in Computer Science courses: Introduction to Programming, Techniques in Programming, Computer Organization
- Assist students with questions in Computer Science courses: Introduction to Programming, Techniques in Programming, Introduction to Python for Data Analytics

HONORS & AWARDS

- **Student Research Symposium Best Poster/Presentation Award**, Spring 2021
- **Science and Engineering Research Center Grant**, Fall 2019
- **TCU Academic Achievement Award**, May 2018
- **TCU Scholars**, 7 semesters
- **Dean's Honor List - TCU**, all semesters

SKILLS

Programming Languages: Python, Java, C, R, MySQL, MongoDB, LaTeX(Advanced), MATLAB, Scala (Intermediate), Octave (Fundamental)
Libraries/Frameworks: PyTorch, Tensorflow, Matplotlib, pandas, scikit-learn, NumPy, OpenCV, spaCy, NLTK, Gensim.
Operating Systems: Linux, MacOS, Windows

LEADERSHIP & ADDITIONAL EXPERIENCE

TCU Rhino Initiative, Texas Christian University **Fort Worth, Texas**
Study Abroad in South Africa July 2019

Vietnamese Student Association, Texas Christian University **Fort Worth, Texas**
Vice President of Internal Affairs June 2018 – April 2019

TCU's chapter of Upsilon Pi Epsilon, Member **Fort Worth, Texas**
International Honor Society for the Computing and Information Sciences

TCU's chapter of Pi Mu Epsilon, Member **Fort Worth, Texas**
National Mathematics Honor Society