DUO ZHANG

(+86)17806260517 ⋄ duo_zhang@qq.com

EDUCATION

Shandong University
B.E. in Computer Science Department *2018/06 - 2020/06*
Undergraduate in Energy and Power Engineering Department *2016/09 - 2018/06*

POSITIONS AND EMPLOYMENT

UCLA CSST Program
Research Assistant, Machine learning & Genetics Lab *2019/07 - 2019/09*
Shandong University
Research Assistant, Interdisciplinary Research Center *2020/01 -*

RESEARCH INTERESTS

Robotics, Human Robot Interaction

RESEARCH EXPERIENCES

Tunneling-Free, Second-Order Convergent, Model-Based Grasp Policy Search
As a research assistant under the guidance of Prof. Changhe Tu, Prof. Xifeng Gao and Dr. Zherong Pan, I am developing a new method for Barrett Hand to search a grasp policy, which is strictly tunneling-free with second-order convergence. With this policy, this model can be trained with a small dataset or even no dataset and outputs the parameters of the Barrette hand in a relatively short time. The purpose of this project is to refine and improve the prior work: Deep Differentiable Grasp Planner for High-DOF Grippers. (Prior work link)

Human-like Trajectories Generation
This is my final year project supervised by Prof. Changhe Tu. I used a LSGAN to train a model which can generate human-like trajectories for some scenarios involving human robot interactions with certain given properties like smoothness and length etc. The main purpose of this project is to make the robot behavior more understandable and legible for human partners. This model can only generate trajectories of the end-effector of the robot arm, and the grasping process is not considered in this project.

Identification of Cell-type-specific Genetic Regulation of Gene Expression for Transcriptome-wide Association Studies
During 2019/07-2019/09, I have been studying and researching with Prof. Sriram Sankararaman. We developed a new approach leveraging Tensor Component Analysis (TCA) to estimate cell-specific expression levels from bulk tissue measurements using single nucleotide polymorphisms (SNPs) as predictors. We show that this model performs well in simulations and applied it to a cohort of around 1,500 individuals with expression measured in blood, identifying SNPs that predict a significant proportion of variation in expression levels in four major white blood cells. These SNPs and their estimated effects can be used for cell-specific TWAS in large cohorts with genetic data such as the UK Biobank, which includes over 500,000 samples.

Determination of Physical Parameters of Binary Black Holes and the Origin of Binary Black Holes with Gravitational Wave Data

I joined NAOC (National Astronomical Observatories, CAS) and follow Advanced Senior Researcher Youjun Lu to study and research. I simulated the gravitational wave signals with different parameters in a wide range and set several different templates. Given the templates I trained a Bayesian Classifier determine the likelihood for a signal to be a gravitational wave and matching the parameters with the templates.

Solid-Liquid Coordinated Deformation Mechanism and Defect Control in the Process of Deformation Forging of Deformed Aluminum Alloy
The project is sponored by National Natural Science Foundation of China and held by Prof. Guochao Gu at Shandong university. I was taking charge of metal grain modeling and grain edge recognition. The grain modeling part was intended to build the 3D grain voronoi cells to simulate the coordinates of all the vertices and exporting them to ABAQUS for analyzing the mechanic performance. The other part was using computer vision skills to determine the edge of the grain and binarize the real metallographs.

PRESENTATION

Identification of cell-type-specific genetic regulation of gene expression for transcriptome-wide association studies
Poster presentation at UCLA CSST program

HONORS AND REWARDS

National Scholarship
Sponsored by Ministry of Education of the People's Republic of China
Excellent Cadre Scholarship
Sponsored by Shandong University
Provincial Third Prize of China Undergraduate Mathematical Contest in Modeling
Sponsored by China Society for Industrial and Applied Mathematics
Provincial Third Prize of The Chinese Mathematics Competitions
Sponsored by China Mathematics Society
Honorable Mention of Mathematical Contest in Modelling (MCM)
Sponsored by Mathematical Association of America
Province Third Prize of Internet+ Innovation and Entrepreneurship Competition
Sponsored by Ministry of Education of the People's Republic of China
First Prize of the School Level, Pengpai Cup Fitness Competition
Sponsored by Pengpai Sports
Shandong University Basketball Game Advanced Individual
Sponsored by ANTA sports
Second Prize of Three-Person Basketball Game in the Energy and Power Engineering Department
Sponsored by Shandong University

SKILLS

Programming Skills
C++, Python, JavaScript, Java, Matlab, R
Other Skills
Datamining and Information retrieval, Image Processing, Signal Processing, Mathematical Modelling, Basic Algorithms, Metal Material Processing (including turning, milling, planing, forging, casting, molding, 3D printing and some CNC technologies)

OTHER EXPERIENCES

Engineering Training
I learned Material Processing Skills at Shandong University's factories.
Basketball Team Leader of the Department
I was elected to be the basketball team leader in both departments and took charge of coaching, training the team and making strategies.
Volunteering Services
I am the Leader of Volunteering Organization. I led a volunteer team to teaching kids in Dong Wen Tou elementary school basic maths and physics. Besides, I have organized our class to take care of the old in several nursing homes in Jinnan City. I also have led my classmates to recycle the used batteries and out-of-date medicines in the neighborhood of Shandong University and sent them to related government departments for right disposal.

PERSONAL TRAITS

Highly motivated and eager to learn new things
Strong leadership and cooperation skills
Ability to work as an individual as well as in group
Enthusiast for basketball and power lifting (newbie in power lifting)
Skilled calligrapher in Chinese