

DUO ZHANG

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EDUCATION

Shandong University

B.E. in Computer Science Department

2018/06 - 2020/06

Undergraduate in Energy and Power Engineering Department

2016/09 - 2018/06

RESEARCH EXPERIENCES

Changhe Tu's lab, Interdisciplinary Research Center, Shandong University 2020/01 - Present
Research Assistant Qingdao, Shandong, China

- **Tunneling-free, Second-order Convergent, Model-based Grasp Policy Search**

I am developing a tunneling-free, second-order convergent, model-based grasp policy searching method. This model can generate a pose for the Barrett Hand with high grasp quality in real time and be guaranteed strictly tunneling-free between robot hand and the target.

- **Human-like Trajectories Generation for Robot Arms Given Certain Properties**

I designed a model using LSGAN 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.

Sriram Sankararaman's lab, Computer Science Department, UCLA 2019/07 - 2019/09
Research Assistant, Cross-disciplinary Scholars in Science and Technology Program LA, CA, USA

- **Identification of Cell-type-specific Genetic Regulation of Gene Expression for Transcriptome-wide Association Studies**

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. I also built and published a R package named TWAS for our project.

Youjun Lu's lab, National Astronomical Observatories, CAS 2018/04 - 2018-05
Undergraduate Researcher Beijing, China

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

I simulated various gravitational wave signals with different parameters in a wide range and set them as 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.

Guochao Gu's Lab, Material Science Department, Shandong University 2017/07 - 2018/07
Undergraduate Researcher Jinan, Shandong, China

- **Solid-Liquid Coordinated Deformation Mechanism and Defect Control in the Process of Deformation Forging of Deformed Aluminum Alloy**

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 shape of grain cells when the cells are

worn and the gap between cells are filled with liquid. Then the simulated grain cells are exported to ABAQUS for analyzing the mechanic performance.

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

Excellent Student 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

Shandong University Basketball Game Advanced Individual

Sponsored by ANTA sports

SKILLS

Programming Languages

C++, Python, JavaScript, Java, Matlab, R

Other Skills

Metal Material Processing (including turning, milling, planing, forging, casting, molding, 3D printing and some CNC technologies)

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