

Haolan Xu

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EDUCATION

- **Sichuan University** Chengdu, Sichuan, China
B.E. in Chemical Engineering and Technology; GPA: 3.75(Rank:19/158)
Sept.2018 - June.2022
- **University of Florida** Gainesville, Florida, USA
Master in Computer Science; GPA: 3.88
Sept.2022 - Present
Languages: Python, C++, Julia; Tools: OpenGL, GIT; Framework: Pytorch, Scikit; Platform: Windows, Linux

RESEARCH

- **High-throughput Screening of Organic Materials Using Machine Learning** Sept. 2020 - Mar. 2022
 - Build **Quantitative Structure-Property Relationship(QSPR)** models respectively using **random forest(RF)** and **XGBoost**, and use **K-fold cross-validation** to evaluate models
 - Predict the adsorbent performance score(APS) of Materials through QSPR models to **achieve the selection** of materials with good performance in databases
 - Calculate **the average importance of features** in models to design more efficient design experiments of materials
- **Predicting Performance of Organic Photovoltaic Materials Using Deep Learning** Oct. 2019 - Oct. 2020
 - Creatively propose a **language-like molecular descriptor(SMILES string)** as inputs
 - Predict the potential photoelectric conversion efficiency(PCE) of OPVs through **deep learning(Bi-LSTM network model)**
 - Introduce **the attention mechanism** to identify the segments that are important to PCE, which can provide guidance for the design experiments of OPVs

PROJECTS

- **Build the robot arm and interact with it in OpenGL** Oct. 2022 - Nov. 2022
 - Set up a 3D integer coordinate system inside Window with 1024×768 Resolution, and build a rotatable camera with **Perspective projection**
 - Create each component of the robot arm in **Blender**
 - Apply **Transformation matrices** to enable keyboard-based interaction with the robot arm in OpenGL
 - Construct a fundamental lighting model in OpenGL to illuminate the whole scene
 - Implement the **Color picking** to allow the selection of individual parts of the robotic arm
- **Use PN triangles to refine a self head model in OpenGL** Nov. 2022 - Dec. 2022
 - Utilize **FaceBuilder in Blender** to construct a detailed head model
 - Map facial photographs(Front view, left and right side view) onto the quad facets of the grid, and subsequently incorporate them into the head model.
 - Implement **PN triangle tessellation** to enhance the smoothness of the textured model
 - Employ **Ray casting** to pick each vertex of the face mesh
- **Progressive Rock Classification using machine learning** Oct. 2022 - Dec. 2022
 - Convert the songs into spectrograms and extract features using **librosa library in sklearn**
 - Use the feature importance function in **random forest** to filter features to reduce the influence of noise
 - Choose three models: **Deep Neural Networks; Support Vector Machine; Long short-term memory** to achieve the classification

HONORS AND AWARDS

- Honor Prize in Mathematical Contest In Modeling - 2021
- 3rd Prize in Asia and Pacific Mathematical Contest in Modeling - 2020
- 2nd Prize in Mathematics Competition in Sichuan University - 2019
- Outstanding Student of the Year in Sichuan University - 2019/2020