MIU LUN (ANDY) LAU

Highly motivated computer scientist with extensive experience in physical modeling, machine learning and data analytics. Extensive experience in both various machine learning framework (Tensorflow, Pytorch) and physical modeling(FEM, Molecular Dynamics). Skilled in using optimization methods for data optimization and computer vision. Efficient and confident while working individually or in a team environment.

CONTACT

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SKILLS

Programming

Python
Bash
C++/C
CUDA
LaTeX
Matlab
SQL

Operating Systems

Linux
MacOS
Windows

Software & Tools

Visualization
(e.g. matplotlib, tableau ...)
Data handling/analysis
(e.g. numpy, scipy, pandas, ...)
Machine Learning
(e.g. tensorflow, scikit learn, ..)
Computer Vision
(e.g. OpenCV, Pillow)
Cloud Systems
(e.g. AWS, Azure, Sawtooth, Falcon)
CAD Software
(e.g. Solidworks, Fusion 360)

Languages

English
Cantonese

HOBBY

Running | Hiking | 3D Printing | Electronic Tinkering | Camping

EDUCATION & EMPLOYMENT

08/2018 - 12/2022 (expected)
Boise State University, Boise — Doctor of Philosophy
Computer Science
Emphasis: Computational Science and Engineering

05-2017 - 09-2017
Idaho Fall, Idaho — Idaho National Laboratory
Undergraduate Internship

08/2014 - 05/2018
Boise State University, Boise — Bachelor of Science
Mechanical Engineering

RESEARCH EXPERIENCE

Analysis of extended X-ray absorption fine structure using AI techniques

- Developed machine learning algorithms and data query pipeline for analyzing EXAFS Spectra using Genetic Algorithms
- Developed automated analysis of *in-situ* and operando measurement of EXAFS spectra such as batteries and irradiation
- Conducted rapid analysis of large scale data (>10 Gb) for third generation synchrotron and accelerators

Enhanced Privacy Focus for Augment Reality (AR) Interactions

- Developed custom hand gesture and vision recognition ML models using Tensorflow
- Developed privacy sensitive layer in AR using OpenCV and Unity

In situ ion irradiation of amorphous TiO2 nanotubes

- Conducted large scale molecular dynamics modeling of TiO_2 (Anatase, Rutile, Amorphous) using LAMMPS
- Performed ion-irradiation modelling and analysis of surface morphology defects of TiO_2
- Constructed customize empirical hybrid functionals using Machine Learning fitting

Topology optimized studies for additive manufacturing heat exchanger

- Performed molecular dynamics studies of Zeolite 13X with Kaolin and Bentonite binder for use in additive manufacturing
- Developed machine learning algorithms for topology optimized geometry with supplement from Finite Element Analysis (FEM) and Computational Fluid Dynamics (CFD)

Tetrahedral Mesh Generation with Nodal Attributes from a Point Cloud

- Developed python based workflow to generate a tetrahedral mesh with nodal attributes from a point cloud
- Applied to reservoir engineering point cloud dataset with over 10 million points
- Performed dynamics and steady state fluid modeling of reservoir flow through CFD