Duowen CHEN

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# EDUCATION

**Columbia University - New York, NY** Sep 2020 - Dec 2021
*Master of Science: Computer Science*
- **GPA**: 4.14/4.33
- **Course Taken**: Computer Animation, Quantum Computing, Computational Robotics, Numerical Method, Machine Learning, NLP, Intro to Database, Intro to EM & Optics, Project in CS

**University of Washington - Seattle, WA** Sep 2016 - Jun 2020
*Bachelor of Science: Computer Science*
- **GPA**: 3.87/4.00
- **Course Taken**: Data Structures and Parallelism, The Hardware/Software Interface, System Programming, Software Engineering, Algorithm, Machine Learning, Computer Graphics, Computer Vision, Networks, Operation System, Distributed System
- **Certification:** SCRUM Master Certificate

# RESEARCH & PROJECT

***Research Assistant*, Columbia University - New York, NY** Oct 2020 - Present
*Supervisor: Prof. Changxi Zheng,* The Department of Computer Science
- *Topic*: Data-driven Method for Improving Accuracy of FDTD Simulation with Irregular Geometry
- Self-studied FDTD method for wave simulation (Book by Allen Taflove) & EM theory
- Modified C++ FDTD simulation code base with various ML purposes and build its python package using pybind11
- Used ML technique applied on corresponding update parameters to improve long-time simulation accuracy such as eigenfrequency and energy when irregular boundaries present in the domain

***Research Assistant*, University of Washington - Seattle, WA** Dec 2018 - Dec 2020
*Supervisor: Prof. Adriana Schulz & Dr. Benjamin Jones*, Paul G. Allen School of Computer Science & Engineering
- *Topic*: BREP Dataset and GCN for Automatic Mating of CAD Assemblies
- Collected data from Onshape and organized different types of 3D assembly models in a hierarchical way (graph representation for BREP data)
- Utilized structures such as GNNs, PointNet and other deep learning networks suitable for 3D models and other related topics recent paper suggests (such as 6D or SVD encoding of transformation matrices) to develop new approaches to learn mate relationships, possible transformations and possible mate connector location among parts in assemblies based on geometries
- Prototyped an UI to suggest users with proper mating relations and simulate freedom of movement when users want to mate two parts/assemblies
- Authored weekly reports, presented results weekly and reviewed some research papers related to the topics
- **Outcoming Paper**: Benjamin Jones, Dalton Hildreth, **Duowen Chen**, Ilya Baran, Vova Kim, Adriana Schulz (2021). SB-GCN: Structured BREP Graph Convolutional Network for Automatic Mating of CAD Assemblies. (Conditionally Accepted). *Siggraph Asia*

***Project* form Computer Graphics / Animation Course** Sp. 2019 / Au. 2020
*University of Washington (CSE457) / Columbia University (COMS4167)*
- Graphics Project: Synthesized all the topics learned during the class including shading, geometry, ray-tracing rendering using monte-carlo's method and animation using splines
- Animation Artworks: Physics based simulation starting from mass-spring system with different stepping method to object collisions to rigid body simulations to deformable material simulation

# PROFESSIONAL EXPERIENCE

***Software Engineer Intern*, Adobe Inc. - Seattle, WA** Jun 2019 - Sep 2019
- Calculated clients' return on investment (ROI) over LinkedIn by combining click-tracing results and clients' sales information. The estimation was fine to ROI of each single Ad.
- Auto-Tagged each LinkedIn Ad with unique identifier parameter
- Automated and managed the ability to search fast among massive logging data via migrating to Splunk, which also kept consistent with other Adobe productions. Developed dashboard, report and alert system on top of the new logging platform

***Software Engineer Intern*, Apply Square Education & Technology, Co, LTD - Beijing,** Jun 2019 - Sep 2019

**CHN**

- Prototyped a WeChat mini program called ZhuanZhuTang to help task and project management for users among engineering teams and self-study groups, etc.
- Designed an automatic full-screen shooting tool for testing and debugging

# SKILLS & TEACHING ACTIVITIES

***Computational Skills***

- Languages: Python, C/C++/C#, Java, R, HTML/CSS
- Frameworks: Pytorch, Numpy, Pybind11, Eigen, Pandas, Ignite
- Other Tools: Paraview, Splunk, Linux Shell, Adobe Photoshop, Github, Kaggle

***Teaching Activities***

- Columbia University, COMS 4167: Computer Animation, Prof. Changxi Zheng
- University of Washington, CSE312: Probability Theory & Statistics, Prof. Stefano Tessaro & Prof. Huijia Lin