

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

University of Washington - Seattle, WA Sep. 2016 – Jun. 2020
Bachelor of Science: Computer Science
□ **GPA:** 3.87/4.00

Courses Taken at Columbia & UW

- **Graphics related:** Computer Graphics, Computer Animation, Computer Vision, Science & Arts Digital Photography
- **Math & Physics:** Quantum Computing, Intro to EM & Optics, Numerical Method, Differential Equations, Partial Differential Equations
- **CS-Core:** Database, Data Structure, Algorithm, Operation Systems, Machine Learning, Computer Network, Computer Programming, NLP, Computational Robotics

RESEARCH & PROJECT

Research Assistant, Columbia University - New York, NY Oct. 2020 - Present
Supervisor: Prof. [Changxi Zheng](#), The Department of Computer Science

- Improved FDTD simulation accuracy with irregular geometry using a data-driven method
- Studied and implemented the FDTD method for wave simulation (Allen Taflove's book) and EM theory
- Modified C++ FDTD simulation code base suitable for machine learning purposes and built a Python package using pybind11
- Used machine learning approaches on corresponding update parameters to increase long-time simulation accuracy such as eigenfrequency and energy when irregular boundaries are present in the domain

Research Assistant, University of Washington - Seattle, WA Dec. 2018 – Dec. 2020
Supervisor: Prof. [Adriana Schulz](#), Paul G. Allen School of Computer Science & Engineering

- Developed a BREP Dataset and identified a proper learning approach for Automatic Mating of CAD Assemblies
- Collected data from Onshape and organized various types of 3D assembly models in a hierarchical order (graph representation for BREP data)
- Developed new approaches to learn mate relationships, potential transformations, and possible mate connector location among parts in assemblies based on geometries using structures such as GNNs, PointNet and other deep learning networks suited for 3D models and other related topics suggested in a recent paper (such as 6D or SVD encoding of transformation matrices)
- Created a prototype for a user interface that suggests proper mating relations and simulates freedom of movement when users want to mate two parts/assemblies
- **Outcoming Paper:** Benjamin Jones, Dalton Hildreth, **Duowen Chen**, Ilya Baran, Vova Kim, Adriana Schulz (2021). [AutoMate: A Dataset and Learning Approach for Automatic Mating of CAD Assemblies](#) *Siggraph Asia*

Project form Computer Graphics / Animation Course Sep. 2019 / Aug. 2020
University of Washington (CSE457) / Columbia University (COMS4167)

- **Graphics Project:** Synthesized all the topics covered in class, including shading, geometry, ray-tracing rendering using Monte-Carlo's method, splines, and animation
- **Animation Artworks:** Implemented physics-based simulations starting with a mass-spring system with various stepping methods, object collisions, rigid body simulations, and deformable material simulations

PROFESSIONAL EXPERIENCE

Software Engineer Intern, Adobe Inc. - Seattle, WA Jun 2019 - Sep 2019

- Calculated clients' return on investment (ROI) on LinkedIn by combining click-tracking data and clients' sales information, and concluded that the ROI of every single Ad was accurately estimated
- Auto-tagged each LinkedIn Ad with a unique identifier parameter
- Automated and managed the capacity to search quickly among massive logs data by switching to Splunk, while remaining consistent with other Adobe productions, then created a new logging platform, a dashboard, report, and alert system

Software Engineer Intern, ApplySquare Education & Technology, Co, LTD - Beijing, CHN Jun 2018 - Aug 2019

- Prototyped a WeChat mini program to aid task and project management for users in engineering teams and self-study groups
- 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 Dataset & ML techniques

Teaching Activities

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

Certificate & Competition

- SCRUM Master Certificate, 2020
- Kaggle Bronze medal (top 6%/734 groups, *Carvana Image Masking Challenge*), 2017

Visa & Status

- Current: F1 Visa
- Potential: EB-5 in progress, priority date: 2016/09, I-526 permission: 2018/01