Duowen CHEN

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EDUCATION

Georgia Institute of Technology – Atlanta, GA Jan. 2024 – Present
PhD student

Dartmouth College – Hanover, NH Sep. 2022 – Dec. 2023
PhD student

Columbia University - New York, NY Sep. 2020 – Dec. 2021
Master of Science: Computer Science
- **GPA**: 4.14/4.33

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

Courses Taken at Georgia Tech & Dartmouth & Columbia & UW
- **Graphics related:** Computer Graphics, Computer Animation, Computer Vision, Science & Arts Digital Photography, Rendering Algorithm
- **Math & Physics:** Quantum Computing, Intro to EM & Optics, Numerical Method, Differential Equations, Computational Physics
- **CS-Core:** Database, Data Structure, Algorithm, Operation Systems, Machine Learning, Computer Network, Computer Programming, NLP, Computational Robotics, HCI

RESEARCH

***Research Assistant,* Georgia Tech - Atlanta, GA** Jan. 2024 – Present
Supervisor: Prof. Bo Zhu, School of Interactive Computing
- Working on fluid simulation based on impulse variable and flow maps.

Outcoming Paper:
- **Duowen Chen**, Zhiqi Li, Junwei Zhou, Fan Feng, Tao Du, Bo Zhu. Solid-Fluid Interaction on Particle Flow Map. *Conditionally Accepted to SIGGRAPH Asia (TOG) 2024*
- Zhiqi Li, **Duowen Chen**, Candong Lin, Jinyuan Liu, Bo Zhu. Particle laden fluid on flow maps. *Conditionally Accepted to SIGGRAPH Asia (TOG) 2024*
- Sinan Wang, Yitong Deng, Molin Deng, Hong-Xing Yu, Junwei Zhou, **Duowen Chen**, Taku Komura, Jiajun Wu, Bo Zhu. An Eulerian Vortex Method on Flow Maps. *Conditionally Accepted to SIGGRAPH Asia (TOG) 2024*
- Junwei Zhou, **Duowen Chen**, Molin Deng, Yitong Deng, Yuchen Sun, Sinan Wang, Shiying Xiong, Bo Zhu. Eulerian-Lagrangian Fluid Simulation on Particle Flow Maps. *SIGGRAPH (TOG) 2024*
- Zhiqi Li, Barnabás Börcsök, **Duowen Chen**, Yutong Sun, Bo Zhu, Greg Turk. Lagrangian Covector Fluid with Free Surface. *SIGGRAPH (Conference Track) 2024*

***Research Assistant,* Dartmouth College - Hanover, NH** Sep. 2022 – Present
Supervisor: Prof. Bo Zhu, The Department of Computer Science
- Developed neural particle level set method for dynamic interface tracking.
- Applied such method for free-surface fluid simulation

***Research Assistant,* Columbia University - New York, NY** Oct. 2020 – Jun. 2022
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

***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

Outcoming Paper:

- Benjamin Jones, Dalton Hildreth**, Duowen Chen**, Ilya Baran, Vova Kim, Adriana Schulz. AutoMate: A Dataset and Learning Approach for Automatic Mating of CAD Assemblies *SIGGRAPH Asia (TOG) 2021*

PROJECT

***Project* form Computer Graphics / Animation Course / Rendering Course** 2019 / 2020 / 2022

University of Washington (CSE457) / Columbia University (COMS4167) / Dartmouth College (COSC287)

- 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
- Rendering Project: Implemented importance sampling for different light source for monte-carlo ray tracing, photon mapping, volumetric rendering, subsurface scattering.

***Personal Project* of Snow Removal** March. 2022

Personal Project

- DesnowNet survey and CycleSnowGAN. Surveyed and implemented DesnowNet. Used CycleGAN as backbone combined with Pyramid pooling, ASPP and loss network to rebuild a snow removal network but in a GAN fashion.

***Project* form Deep Learning Course** Dec. 2021

Columbia University (COMS4995)

- Survey on neural implicit method for reconstruction tasks. Merged implementations of Neural implicit representation of SDF, SIREN and NGLoD to the same framework and compared their performance for reconstructing 3D Mesh given point cloud data.

PROFESSIONAL EXPERIENCE

***Graphics Research Intern, Tencent America* - New York, NY** Feb. 2022 – June. 2022

- Explored using machine learning to accelerate projective dynamics
- Implemented Python visualizer and wrapper of deformable simulation with the help of Blender python API and Pybind11

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

- Calculated clients' return on investment (ROI) on LinkedIn and auto-tagged LinkedIn Ads
- Automated and managed the capacity to search quickly among massive logs data by switching to Splunk

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

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

SKILLS & TEACHING ACTIVITIES

Computational Skills

- Languages: Python, C/C++/C#, Java, R, HTML/CSS
- Frameworks: Taichi, Pytorch, Numpy, Pybind11, Eigen, Pandas, Ignite
- Other Tools: Paraview, Splunk, Adobe Illustrator, Premier, Photoshop, Houdini, Blender

Teaching Activities

- Georgia Tech, CS 3451: Computer Graphics, Prof. Bo Zhu
- Dartmouth College, COSC 70: Foundation of Applied Computer Science, Prof. Bo Zhu

- 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