

# Jie Xu

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## Education:

- **Massachusetts Institute of Technology** 2016.9 - present  
*PhD* in CSAIL, Electrical Engineering and Computer Science (*Overall GPA: 5.0/5.0*)
- **Tsinghua University** 2012.9 - 2016.7  
*Bachelor of Engineering* in Computer Science and Technology (*Overall GPA: 93.2/100 Rank: 1/116, Major GPA: 94.9/100*)
- **Carnegie Mellon University** 2015.7 - 2015.9  
*Visiting Student* in Graphics group, Robotics Institute

## Research Interests:

- Robotics and Control
- Reinforcement Learning
- Physics Based Simulation/Animation
- 3D Segmentation, Reconstruction

## Publication:

- **Prediction-Guided Multi-Objective Reinforcement Learning for Continuous Robot Control**  
*Jie Xu, Yunsheng Tian, Pingchuan Ma, Daniela Rus, Shinjiro Seuda, Wojciech Matusik*  
International Conference on Machine Learning (ICML), 2020
- **RoboGrammar: Graph Grammar for Terrain-Optimized Robot Design**  
*Allan Zhao, Jie Xu, Mina Konaković Luković, Josephine Hughes, Andrew Spielberg, Daniela Rus, Wojciech Matusik*  
ACM Transactions on Graphics, 39(6), (In proceeding of SIGGRAPH Asia), 2020
- **Learning to Fly: Computational Controller Design for Hybrid UAVs with Reinforcement Learning**  
*Jie Xu, Tao Du, Michael Foshey, Beichen Li, Bo Zhu, Adriana Schulz, Wojciech Matusik*  
ACM Transactions on Graphics, 38(4), (In proceeding of SIGGRAPH), 2019
- **Interactive Design Space Exploration and Optimization for CAD Models**  
*Adriana Schulz, Jie Xu, Bo Zhu, Changxi Zheng, Eitan Grispun, Wojciech Matusik*  
ACM Transactions on Graphics, 36(4), (In proceeding of SIGGRAPH), 2017
- **View Suggestion for Interactive Segmentation of Indoor Scenes**  
*Sheng Yang, Jie Xu, Kang Chen, Hong-Bo Fu*  
Computational Visual Media, June 2017, Volume 3, Issue 2
- **Extracting Sharp Features from RGB-D images**  
*Yan-Pei Cao, Tao Ju, Jie Xu, Shi-Min Hu*  
Computer Graphics Forum, Vol. 35, No. 8, pp. 138-174, 2017.

## Teaching:

- **Teaching Assistant (MIT 6.839/6.807)** 2019 Fall  
MIT 6.830 Advanced Computer Graphics/6.807 Computational Design and Fabrication

## Other Project Experience:

- **Research Project on Computational Fluid Dynamics** 2017.3 - 2017.9  
*Advisor: Prof. Wojciech Matusik* CSAIL, Massachusetts Institute of Technology
  - **Accelerated Steady-State Navier-Stokes Solver for Aerodynamics Computing**
    - \* We implemented an efficient steady-state incompressible Navier-Stokes solver on eulerian grid to compute the aerodynamics effect on airplane wings at different angle of attack to enable computational design of aerial vehicle by simulating a virtual wind tunnel test without fabricating real models.
    - \* Based on the incompressible steady Navier-Stokes equations, we replaced the convection term by the convection value in previous step by applying a semi-lagrangian technique. Furthermore, we applied a 2nd order accurate boundary condition to improve the fidelity of the results. Our method is 5x faster than state-of-the-art Navier-Stokes aircraft aerodynamics solver with comparable accuracy.
- **Research Intern on Animation, Simulation & Robot Design** 2015.7 - 2015.9  
*Advisor: Prof. Stelian Coros* Robotics Institute, Carnegie Mellon University
  - **Convenient Modelling System for Designing 3D Printable Robots**
    - \* Developed an easy-to-use modelling system for designing 3d printable robots. Users can interact with our system and create his/her personalized robots conveniently.
    - \* Users can load a robot from a file and can easily edit the shape and topological structure of the robot.
  - **Shell Simulation**
    - \* Designed and implemented a thin shell simulation algorithm based on the idea of an Eurographics paper *Discrete Shells*.
- **Research Intern on Geometry Processing** 2014.3 - 2014.7  
*Advisor: Prof. Shi-Min Hu* Graphics & Geometric Computing Group, Tsinghua

- **Interactive Image-Guided Modeling of Extruded Shapes**
  - \* Developed the GUI of this project.
  - \* Implemented algorithms for extracting edges and detecting planes according to the RGB image and the users' operations.

### Academic Awards:

- **ACM International Collegiate Programming Contest** 2012 - 2015
  - *Gold Medal* in the ACM-ICPC World Finals 2015  
*(ranked 4<sup>th</sup> among 12,720 teams from 2,534 universities in 101 countries)*
  - *Champion* in the ACM-ICPC Asia Xi'an Regional Contest 2014
  - *Gold Medal* in the ACM-ICPC Asia Shanghai Regional Contest 2014
  - *Gold Medal* in the ACM-ICPC Asia Tianjin Regional Contest 2012
- *Gold Medal* in **National Olympiad in Informatics** 2011

### Scholarships:

- **Outstanding Graduate in Tsinghua University** 2016  
*Awarded the most excellent graduates all over the university. (63 out of 3000+ graduates)*
- **Google Excellence Scholarship** 2015  
*Awards the students who demonstrate superior academic achievement, 58 students are selected nationwide*
- **China Computer Federation Outstanding Undergraduate Award** 2015  
*Awards the students who have excellent academic and researching performance, 4 students in Tsinghua*
- **Comprehensive Excellence Scholarship in Tsinghua University** 2013  
*The scholarship for comprehensive performance*

### Technical Strength:

- **Programming Languages:** C++, Python, MATLAB, Html, Java and Pascal
- **Tools, Libraries:** Eigen, OpenGL, OpenCV, PCL