

---

# Yang Gao (高 阳)

No. 37, Xueyuan Road, Haidian District, Beijing, 100191  
(+86) 156-0056-4334

[gaoyang\\_vr@buaa.edu.cn](mailto:gaoyang_vr@buaa.edu.cn), <http://gaoyangvr.github.io/>



## EDUCATION

- |                        |  |
|------------------------|--|
| Sept. 2014 - Now       | Ph.D., Computer Application Technology<br>Advisor: Prof. Aimin Hao (Beihang) and Prof. Hong Qin (Stony Brook University)<br>State Key Laboratory of Virtual Reality Technology and Systems<br>School of Computer Science and Engineering, Beihang University |
| Sept. 2012 - Jun. 2014 | M.S., Computer Application Technology<br>North China University of Water Resources and Electric Power  |
| Aug. 2013 – Aug. 2014  | Visiting scholar, major project group of national natural science foundation<br>State Key Laboratory of Virtual Reality Technology and Systems   |
| Sept. 2008 - Jun. 2012 | B.S., Computer Science<br>North China University of Water Resources and Electric Power<br>Recommended to the M.S. program without exams, top 6%  |

## 专业技能

- Experienced in programing with C/C++, Matlab, Python, etc.
- Expert in computer graphics and OpenGL, GLSL, etc., and renderers Vray, PovRay, MentalRay, etc.
- Expert in computer graphical simulation, especially physical-based fluid simulation
- Familiar with parallel computing and skillful at using CUDA and OpenMP
- Familiar with softwares Maya, Blender, Unity3D, 3Dmax, etc.
- Familiar with machine learning techniques, such as SVM, decision trees, neural networks, etc.
- Experienced in implementing algorithms based on research papers and academic writing
- Experienced in scientific research projects and patent document writing

## AWARDS & HONORS

- |                    |   |
|--------------------|---|
| ■ Oct. 2011        | Merit Student of Henan Province (Only 5 in university)  |
| ■ Jun. 2012        | Outstanding Graduate Award  |
| ■ Sept. 2014 /2015 | First-class academic scholarship (Top 20%)  |
| ■ Oct. 2017        | National Graduate Scholarship (1st place of doctoral students in SKL VR Technology and Systems) |
| ■ Apr. 2018        | Excellent Foundation of BUAA for PhD students (Only 3 in CS)                                    |

## PROGRAM EXPERIENCE

- Mar.3 - Now Visual Model and Environment Construction and Its Dynamic Simulation  
PI: Prof. Hong Qin (USA)  
Duty: 3D model analysis and environmental modeling and support other multi-source data applications
- Aug. 2013 - Dec. 2016 Data Modeling and Interactive Virtual Surgery of Digital Human Organs  
PI: Prof. Qiping Zhao and Prof. Aimin Hao  
Duty: Develop virtual surgery prototype system and other related techniques

## ACADEMIC ACTIVITIES

- Dec. 2014 SIGGRAPH Asia in Shenzhen, China
- Oct. 2015 Attended VRST in Beijing, China
- Dec. 2016 Attended and demonstrated PCI simulator on SIGGRAPH Asia in Macau, China
- Jun. 2017 Attended and make an oral presentation on CGI in YOK, Japan

---

## MAIN PROJECTS

- Percutaneous Coronary Intervention (PCI) virtual surgery simulator  
A PCI simulator including tissue deformation, catheter and wire simulation, fluid simulation, haptic feedback, etc
- Two-Way Coupled Heat Transmission DDF-LBM Model  
Propose a two-way coupled model for physics-based gas energy exchange between heat and kinetics by extending DDF-LBM method
- Heat driven FLIP model for liquid-gas-solid transformation and interaction  
Develop a heat-based model to control the multiphases transition and use SPH method for gas motion to simulate multiphases interactions
- A PBD-FLIP coupling method for soft objects and fluid interactions  
Propose a novel integrated approach supporting the seamless unification of FLIP and dynamic shape matching to handle new phenomena such as high-fidelity fluid-solid interactions, solid deformations, melting and immiscible fluid coupling
- Unsupervised clustering method for fluid particles for simulation efficiency  
Introduce a *k-means* clustering method into the SPH framework to dynamically partition fluid particles into two disjoint groups based on their velocities for efficiency issue

## PUBLICATIONS

- **Yang Gao**, Shuai Li, Hong Qin and Aimin Hao. A Novel Fluid-solid Coupling Framework Integrating FLIP and Shape Matching Methods, [C]Proceedings of the Computer Graphics International Conference (CGI), 2017. (CCF C )
- **Yang Gao**, Shuai Li, Lipeng Yang, Hong Qin and Aimin Hao. An efficient heat-based model for solid-liquid-gas phase transition and dynamic interaction, [J]Graphical Models, Volume 94, November 2017, Pages 14-24. (CCF B)
- **Yang Gao**, Shuai Li, Yinghao Xu, Hong Qin and Aimin Hao. An efficient FLIP and shape matching coupled method for fluid-solid and two-phase fluid simulations, [J]The Visual Computer, Volume 6-8, Pages 1-13. (CCF C)
- **Yang Gao**, Shuai Li, Aimin Hao, Hong Qin. Two-Way Coupled Heat Transmission Model with Its Applications in Multi-Phase Fluid Simulations, [J]IEEE Trans. on Visualization and Computer Graphics (TVCG). (CCF A, Under revision)
- Weicai Yang, Qing Chang, Hui Li, **Yang Gao**, Lina Bao. A novel location awareness method for spot beam emitters. [J]IET Radar Sonar and Navigation (IF: 1.51, Accept)
- Yinghao Xu, **Yang Gao**, Shuai Li, Hong Qin, Aimin Hao. Hybrid Particle-grid Modeling for Powdered Materials based on APIC, [C]Pacific Graphics 2018. (CCF B, Under review, Co-first author)
- Zhong Zheng, **Yang Gao**, Shuai Li, Hong Qin and Aimin Hao. Robust and Efficient SPH Simulation for High-speed Fluids with the Dynamic Particle Partitioning Method, [C]Pacific Graphics 2018.(CCF B, Under review,Co-first author)
- Junjun Pan, Yuhang Yang, **Yang Gao**, Hong Qin. Real-time simulation of electrocautery procedures using meshfree methods in laparoscopic cholecystectomy, [J]Journal of Biomedical Informatics Submission: Manuscript Number Assigned (IF: 2.75, Under review)

## PATENES

- 基于格子 Boltzmann 的流体可视化仿真方法 (2016, 1<sup>st</sup> student author, Authorized)
- 软组织形变仿真方法 (2016, 2<sup>nd</sup> student author, Authorized)
- 一种基于欧拉-拉格朗日耦合方法的流体仿真方法 (2017, 1<sup>st</sup> student author, Authorized)
- 一种基于离散格子 Boltzmann 双分布模型的热流体仿真方法 (2017, 1<sup>st</sup> student author, Authorized)
- 一种基于 FLIP 与 Shape matching 混合模型的不可融多相流仿真方法 (2017, 1<sup>st</sup> student author, Substantial Examination)