# Yang Gao (高 阳)

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## EDUCATION

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

## SKILLS

- 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

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| ■ 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. Qinping Zhao and Prof. Aimin Hao
Duty: Develop virtual surgery prototype system and other related techniques

## ACADEMIC ACTIVITIES

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| ■ 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 interacions

  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, Yuhan 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（2016，1st student author，Authorized）

- 软组织形变仿真方法（2016，2nd student author，Authorized)）

- 一种基于欧拉-拉格朗日耦合方法的流体仿真方法（2017，1st 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（2017，1st 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（2017，1st student author，Substantial Examination）