

Shuhao Tan

Ph.D student at University of Maryland, College Park

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EDUCATION

- University of Maryland, College Park 08/2016-now
Department of Computer Science
Ph.D student in Computer Science
Research Area: Computational Geometry
- The Hong Kong University of Science and Technology 09/2012-06/2016
School of Engineering, Department of Computer Science
Bachelor of Engineering in Computer Science, Minor in Mathematics
Academic Achievement Medal (About top 1% of the graduates)
Straight A in all computer science courses
First Class Honors (GPA over 3.5 out of 4.3)

ACHIEVEMENTS

- Member of ACM/ICPC Programming Team 09/2016-06/2017
University of Maryland, College Park
School rank 56th (**out of 128 universities**) in 2017 ACM/ICPC World Finals.
Second runner-up (**out of 177 teams**) in 2016 ACM/ICPC Mid-Atlantic USA Regional Contest.
Did all the coding at the contest.
- Member of ACM/ICPC Programming Team 09/2013-06/2016
The Hong Kong University of Science and Technology
Gold Medal (**top 10% of all teams**) in 2015 ACM/ICPC Shanghai Regional Contest.
School rank 7th in 2014 ACM/ICPC Taichung Regional Contest.

PERSONAL PROJECTS

- Implemented a guided path tracer with reinforced learning based on ideas from <https://cgl.ethz.ch/publications/papers/paperMue17a.php> and <https://arxiv.org/pdf/1701.07403.pdf>.
Applied Q-learning to estimate the incident radiance of the space, and guide the ray to high energy directions.
Course project for Computer Graphics. Available at: <https://github.com/johnmave126/nori-740>. Term essay available at: <https://github.com/johnmave126/nori-740/raw/master/report.pdf>
- Re-implemented a scalable parallel 3D FFT algorithm in <http://dx.doi.org/10.1016/j.jocs.2015.12.001> from scratch.
Interleave computation and communication to increase performance. Project based on MPI.
Available at <https://bitbucket.org/johnmave126/714-fft>
- Implemented an interactive web system for Film Society based on their user journeys.
Implemented the frontend in HTML5/Javascript/CSS3 and a RESTful backend using Flask+peewee in Python with a MySQL-based storage.

WORK EXPERIENCE

- Teaching Assistant 08/2017-now
Department of Computer Science, University of Maryland, College Park
Cooperating with instructors and other TAs to deliver introductory programming courses and algorithm courses.
- Google Summer of Code 06/2020-08/2020
Contribute to [CGAL](#)(The Computational Geometry Algorithms Library) project.
Worked on deciding simplicity of a curve on a surface up to homotopy.
Pull Request could be found at <https://github.com/CGAL/cgal/pull/4898>
- Executive Committee Member at Film Society, HKUST. 03/2013-03/2014
Designed and implemented an interactive website.
Organized Video Workshops for members.

PUBLICATIONS

- *Computing Shapley Values for Mean Width in 3-D*, [arXiv:2002.05252](#), 2020
- *A Spectral Bound on Small-set Expansion for a Directed Graph*, Final Year Thesis, 2016

SKILLS

- Programming: Rust, C/C++, Python, JavaScript, ReasonML, Lua, MATLAB, Haskell
- Framework: MPI, OpenMP, Eigen, Intel TBB
- Machine Learning: PyTorch, Numpy
- Development Tools: CMake, Git