# Tiankui Zhang

PhD in Computational Physics, University of Arizona, Tucson AZ, USA

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## Education

### University of Arizona
*Tucson, AZ, USA*

PhD in Computational BioPhysics, GPA: 4.0/4.0
*Aug 2014 - July 2020*

- Advisor: Prof. Charles Wolgemuth

### Wuhan University
*Wuhan, Hubei, PRC*

Bachelor of Science in Physics, GPA: 3.85/4.0
*Sep 2010 - May 2014*

- Top-Notch Students Scientific Development Program (Physics)
- Advisor: Dr. Eugene Lim (King's College London)

### King's College London
*London, UK*

International Student Exchange Program
*Sep 2013 - May 2014*

## Experience

### Poissonsoft
*Shang Hai, PRC*

Software Development Engineer : Maintain and develop algorithms for geometric kernel
*Jan 2025 - Now*

- local operation : face taper, body taper
- boundary representation topology editing : redundant topology controlling

### ShangHai Xindi
*Shang Hai, PRC*

Senior Researcher : Develop feature commands for CAD software
*Jun 2023 - Jan 2025*

- offset curves : computing offset of connected curves
- bridge surface : generate geometric continuous b-spline surface between two existing surface
- surface fairing : optimize control points of b-spline surface to minimize energy
- fit curve : create b-spline curves with interpolation as well as approximation conditions
- boundary blend : create b-spline surface from surface boundary conditions
- draft offset : make offset of faces and create drafted side faces

### Glodon
*Shang Hai, PRC*

Software Development Engineer : Develop algorithms to solve geometrical problems
*Sep 2020 - Jun 2023*

- silhouette curves : create silhouette curves from face or mesh
- facet of boundary representation model : adaptive watertight mesh generation from boundary representation model for viewing as well as computation

### University of Arizona
*Tucson, AZ, USA*

Research Assistant and Teaching Assitant
*Aug 2014 - Jul 2020*

- Served as teaching assistant for various undergraduate physics and astronomy courses
- Use differential geometry and variational principle to develop partial differntial equations governing dynamics of energy minimized Helfrich elastic surface design and implement a sixth-degree accurate algorithm for Hamilton-Jacobi equation with level set defined boundary conditions
- use Matlab and CUDA c++ to developed a three dimensional massively parallel numerical framework for the simulation of single phase and biphasic vesicles coupled with protein kinetics with professor Charles W. Wolgemuth. Speaking more mathematically, we solve the level set equation in 3 dimensional space coupled with diffusion-convection equation on a 2 dimensional mainfold.

## Skills

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|---|---|
| **computer** | - Proficient in programming with C++, Matlab, CUDA |
| **Applied Mathematics** | - Numerical Methods for PDEs: level set, finite volume<br>- Computational geometry: solid modelling, b-spline curves and surfaces, mesh generation<br>- Theoretical Knowledge: physics, differential geometry, convex optimization |
| **Languages** | - Chinese — native<br>- English — full professional proficiency |

# Publication

- **Tiankui Zhang** and Charles W Wolgemuth. Sixth-order accurate schemes for reinitialization and extrapolation in the level set framework. *Journal of Scientific Computing*, 83(2), 2020.

- **Tiankui Zhang** and Charles W Wolgemuth. A general computational framework for the dynamics of single- and multi-phase vesicles and membranes. *Journal of Computational Physics*, Volume 450, 2022, 110815, ISSN 0021-9991.