

# Hongyi Xia

## Education

- 2010–2015 **B.S. Aerospace Engineering**, *University of Maryland College Park*, College Park, MD.  
Expected Aerospace Engineering Honors Program  
Aerodynamics, Dynamics, Controls, Vibrations, Thermodynamics, Heat Transfer, Propulsion, Aerospace Structures, Computational Fluid Dynamics, Computational Structural Mechanics, Aircraft Design
- 2006–2010 **High School**, *Montgomery Blair High School*, Silver Spring, MD.  
Science, Mathematics, and Computer Science Magnet Program

## Experience

### Industry

- September 2013–August 2014 **Propulsion Intern**, *Space Exploration Technologies*, Hawthorne, CA.  
Developed software to visualize 3D combustion simulations of the Raptor rocket engine in C++ and OpenGL. Integrated with Leap Motion sensor for interaction via hand gestures.
- CFD and thermal analysis of the Merlin 1D rocket engine, Crew Dragon vehicle, Falcon 9 v1.1 vehicle, and Falcon 9 v1.1 developmental vehicle in ANSYS CFX, Star-CCM+, and Thermal Desktop to aid design, ensure correct operation of various components, and to keep on schedule for flight vehicle development and production.
  - Created algorithms to automate data review of the Merlin 1D and Merlin Vacuum engine. Complete rewrite of current engine performance code to calculate engine parameters of single engine acceptance test data and stage test data for improved readability, accuracy, and consistency. Built an understanding of the engine fluid system, core rocket equations, pump maps, stage calculations etc.
  - Supported daily operations of the Liquid Engine Development team in data review and flight data acquisition during launch operations. Developed application to support flight data acquisition.
- September–December 2012 **Entrepreneurial Consultant**, *Science Applications International Corporation*, College Park, MD.  
Researched and wrote recommendation report on waste heat recovery systems for military engines as part of an entrepreneurial consulting engagement partnered through Hinman CEOs.

### Research

- June–August 2013 **Research Intern**, *Interaction Lab, University of Southern California*, Los Angeles, CA.  
Developed exercises for the NAO robot, an exercise buddy for overweight children in an obesity intervention study. Participated in the Viterbi Summer Undergraduate Research Experience (SURE) program.
- June 2010–May 2013 **Research Intern**, *Collective Dynamics and Control Laboratory University of Maryland*, College Park, MD.  
Designed and performed flow visualization experiments to validate a potential flow model. Research culminated in paper titled “Experimental Flow Visualization of Karman Vortex Flow past a Fish-inspired Robot”. Presented at the 2013 AIAA Region I-MA Student Conference. (2012-2013)
- Wrote Matlab simulations to model the dynamics of rigid body collisions to study collective behavior of hexbugs. (2011)
  - Developed a motion coordination algorithm for Lego NXT that enables two robotic tanks to balance on a seesaw. (2010)
- June–August 2012 **Research Intern**, *Miniature Robotics REU Program, University of Maryland*, College Park, MD.  
Developed a method to visualize 3D flows using Microsoft Kinect as a sensor. Calibrated and programmed Microsoft Kinect cameras in OpenCV and Python to collect depth video data. Wrote Matlab scripts to image process depth video data of smoke rings and calculate their flow properties.
- June–August 2009 **Research Intern**, *National Institutes of Health*, Bethesda, MD.  
Research culminated in paper titled “Determination of the Effect of Modifying Gβ5 Expression Levels on Drosophila Oxidative Stress Resistance.” Placed semi-finals in Siemens Competition in Math, Science, and Technology.

## Teaching and Mentoring

- Fall 2014 **Teaching Fellow, ENAE380 Flight Software Systems**, *University of Maryland*, College Park, MD.  
Assisted students during weekly lab sessions for course using C++.
- 2012–2013 **Math Coach, Math Success Program**, *University of Maryland*, College Park, MD.  
Tutored students in undergraduate math courses.
- Spring 2012 **Teaching Fellow, ENES232 Thermodynamics**, *University of Maryland*, College Park, MD.  
Facilitated recitation for 60 students. Graded student quizzes. Held weekly office hours.
- Spring 2012 **Peer Assisted Learning Tutor**, *University of Maryland*, College Park, MD.  
Assisted instructor in a study skills class. Met with individual students to help with coursework and study skills.
- 2011–2013 **Peer Mentor, SEEDS Peer Mentoring Program**, *University of Maryland*, College Park, MD.  
Mentored a group of 10 freshman engineering students to facilitate their adjustment to college and the engineering program each year.

## Skills

- Languages Matlab, Java, Python, C++, OpenGL, git,  $\text{\LaTeX}$
- Applications Ansys, Star-CCM+, Thermal Desktop, Autodesk Inventor, Siemens NX, Visual Studio  
Linux, Mac OS X, Windows
- Fluency English, Mandarin Chinese

## Academic Honors

- 2014 1st Place, JP Morgan Code for Good Challenge - Delaware
- 2010 Banneker Key Scholar - Full, four year scholarship to the University of Maryland
- 2009 Siemens Competition in Math, Science, and Technology Semifinalist
- 2009 Maryland Distinguished Scholar Finalist (Academic Achievement)
- 2009 National AP Scholar

## Service and Leadership

- 2012 **Hinman CEOs** - A living and learning entrepreneurship program at the University of Maryland
- 2011 **Tau Beta Pi** - National Engineering Honor Society. Organized STEM outreach activities including university tours, Science Fairs, Science Bowls, Science Olympiads, and the annual Maryland Day.
- 2011 **Sigma Gamma Tau** - National Aerospace Engineering Honor Society. Oversaw induction of new members.
- 2010 **Alpha Omega Epsilon** - Professional Engineering Sorority

## Publications and Presentations

### Presentations

Hongyi Xia. *Experimental Flow Visualization of Karman Vortex Flow past a Fish-inspired Robot*. 2013: AIAA Region I-MA Student Conference.

Hongyi Xia. *Designing Exercises for the NAO as an Exercise Buddy in an Obesity Intervention Study*. 2013: University of Southern California Viterbi School of Engineering Summer Undergraduate Research Experience Final Presentation.

Hongyi Xia. *3D Flow Visualization using Microsoft Kinect* 2012: Miniature Robotics Research Experiences for Undergraduates Program Final Presentation University of Maryland College Park.

Hongyi Xia. *Determination of the Effect of Modifying G $\beta$ 5 Expression Levels on Drosophila Oxidative Stress Resistance* 2009: Placed as semifinalist in the Siemens Competition in Math, Science, and Technology.