

# Zahra Forootaninia

Git repositories: [https://bitbucket.org/Zahra\\_fn](https://bitbucket.org/Zahra_fn)  
 Home page: <http://www-users.cselabs.umn.edu/~foro0012/>

Minneapolis, MN  
 foro0012@umn.edu  
 +1 763 614 6663

## RESEARCH & WORK EXPERIENCE

### Graduate Research Assistant

- **Physics based animation:** University of Minnesota, June 2016 - present  
 Working on numerical optimization techniques for physics-based animation problems. I implemented crowd simulation based on collision avoidance approach for multi-agent navigation and planning. Currently I am working on applying new optimizations for fluid simulation using SPH. (C++, Python, Matlab)
- **Radio luminosity function and galaxy evolution:** University of Minnesota, Spring 2012 - 2014  
 Using the Very Large Array (VLA) radio telescope to acquire data for a large cluster of galaxies (Abell 2256). Using this data I created images and a catalog of galaxies and performed statistical analysis on the data in order to determine the dynamical properties of the cluster. (Python, Numpy, CASA, BigData)

### Software developer Intern at Infinite Campus, Inc June - December 2015

Porting part of a Couchbase backed Student Information System (SIS) web app from Ruby to Grails and wrote Spock unit tests. (Java, Ruby, Grails, Spock, Tomcat Server)

## SKILLS

**Technical:** Crowd simulation, Physics Based Rendering Techniques (PBRT), SPH simulation, Ray casting, Image processing, Computer vision, Statistical analysis , Mathematical modeling.

**High Level Languages:** C++, Python, Java, MATLAB, Groovy, Grails, Ruby

**Specialized Tools:** Blender, OpenGL, Maya, R, SQL, 2, Tomcat Server, CASA, LaTeX , Mathematica

**Operating System:** Unix/Linux, Mac OS X, Windows

## TEACHING EXPERIENCE

**Elementary Computational Linear Algebra (CSci 2033)**, University of Minnesota Spring 2017 –Teaching discussion sections, grading assignments and exams.

**Introduction to Astronomy Labs (AST 1001)**, University of Minnesota Fall 2012, 2014 and Spring 2015 –Teaching six labs, grading student projects, exams and lab reports.

## EDUCATION

**PhD Computer Science** 2015-2018(expected), University of Minnesota, Minneapolis, MN

**M.Sc. Astrophysics** 2012-2015, University of Minnesota, Minneapolis, MN

**B.Sc. Physics, Solid State Physics** 2007 - 2010, Yasouj University, Yasouj, Iran

## RELATED COURSES

Advanced Algorithm and Data Structure (CSCI 5421)

Computation Aspect of Matrix Theory (CSCI 5304)

Physics Based Animation (CSCI 8980)

Introduction to Data Mining (CSCI 5523)

Statistical Analysis (STAT 5021)

Fundamentals of Computer Graphics I / II (CSCI 5607 / CSCI 5608)

Computer Vision (CSCI 5561)

Advanced Animation (ARTS 5640 )

**Class projects:** Smooth Particle Hydrodynamics (SPH) solver, Ray-Tracing Engine, quaternion-based skeletal animation, shape detection .