# FENG LING

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## PERSONAL


**Birth Year:** 1992
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## EDUCATION

2016 - now **The University of Southern California**, Los Angeles, CA
PhD. Mechanical Engineering

2010 - 2015 **The University of Texas at Austin**, Austin, TX
B.S. Pure Mathematics, December 2015
B.S. Aerospace Engineering (Astronautics), December 2015
Computational Science and Engineering Certificate Program, May 2015
Halliburton Business Foundations Summer Institute, July 2012

## EMPLOYMENT

2017 - now **Research Assistant**, Filament dynamics, supervised by *Prof. Eva Kanso*
2016 **Teaching Assistant**, Engineering Thermodynamics (USC AME 310)
2013 - 2015 **Research Assistant**, Center for Space Research at UT Austin
2011 **Summer Intern**, Zhongchu Development Stock Ltd., Tianjin Xingang Branch

## HONORS AND AWARDS

2015 **Meritorious Winner Team Lead**, COMAP Mathematical Contest In Modeling
Problem B: Searching lost aeroplane in open water, general advise from *Dr Andrew Spann*
2011 **Member**, Aerospace Honor Society Sigma-Gamma-Tau UT Austin Chapter
2010 **Team Lead**, Student Engineering Council Alternative Energy Challenge 3rd place
2010 **Finalist**, Intel International Science and Engineering Fair

## PROJECTS

2016 **2D discrete inverse spectral problem**, supervised by *Prof. Etienne Vouga* and *Prof. Keenan Crane*
reconstructing discrete 2D genus 0 surfaces using only its Laplace-Beltrami spectral data

**At Center for Space Research**, supervised by *Prof. Srinivas Bettadpur*

2014 - 2015 Parametric study on dynamical effects of different misalignment models between spacecraft accelerometer and center of mass
2014 - 2015 Coding assists for GRACE spacecraft thermal environment modeling
2014 Analyzed correlations between GRACE accelerometer reading anomalies, thruster firing pattern, and star camera measurement deviations
2013 - 2014 Studied geographical significance of GRACE on-board SNR and post-fit residue of the Earth gravity model

2014 - 2015 **For the CSE Certificate Program**, advised by *René Hiemstra*
Investigated applications of discrete exterior calculus and discrete differential geometry for exact conservation finite element methods (mixed-methods)
Explored some distributed computing implications using OpenMP

2014 **Senior Design Project**, CubeSat Orbital Re-entry Vehicle System (CORVUS), in a team of 12
Investigated challenges and possible solutions for the CubeSat orbital (LEO) re-entry problem
In charge of simulation of the re-entry and parameter design for thermal subsystem

**for Longhorn Rocket Association**

2012 - 2014 Designed and implemented software ground station and developed post-flight sensor fusion analysis for a high power (L2) rocket payload, joint with *Scott Almond*
2011 Designed and machined model rockets from primitive components (e.g. uncured fiberglass)

2012 **for Satellite Navigation Courses**, advised by Prof. Todd Humphreys
Built a software GPS receiver based on Square Root Information Filters in MATLAB
Tested dual frequency carrier-phase differential GPS capability for the GRID receiver

2010 - 2011 **TRICK Modeling and Simulation Research Initiatives**, in a team of 6
Generated Mars rover landing graphical simulation, results presented at NASA-JSC
Developed interfacing codes based on NASA software (TRICK, AGEA, and EDGE)

## GRADUATE COURSEWORK

**at University of Southern California**

Spring 2017 Incompressible Fluids, *Prof. Mitul Luhar*
Fall 2016 Fokas method (Audit), *Prof. Athanassios Fokas*
Engineering Analytical Dynamics, **A**, *Prof. Firdaus Udwadia*
Incompressible Fluids, **A-**, *Prof. Paul Newton*
Engineering Vibration, **A-**, *Prof. Bingen Yang*

**at University of Texas at Austin**

Spring 2016 Kac-Moody Algebras and Groups (Audit), *Prof. Daniel Allcock*
Algebraic Geometry (Audit), *Prof. David Ben-Zvi*
Riemann Surfaces (Audit), *Prof. Tim Perutz*
Moduli of Higgs Bundle (Audit), *Prof. Andrew Neitzke*
Fall 2015 Algebra, **B**, *Prof. Felipe Voloch*
K-theory as it appears in geometry, **A**, *Prof. Dan Freed*
4-Manifold Topology (Audit), *Prof. Robert Gompf*
Rational Homotopy Theory (Audit), *Dr Jonathan Campbell*
Spring 2015 Differential Topology, **A-**, *Prof. Andrew Neitzke*
D-modules (Audit), *Dr Sam Gunningham*
Ergodic Theory and Dynamics (Audit), *Prof. Lewis Bowen*
Fall 2014 Real Analysis, **A**, *Prof. Lewis Bowen*
Algebraic Topology, **B**, *Prof. Michael Starbird*
Homotopy Type Theory (Audit), *Prof. Andrew Blumberg*
Spring 2014 Complex Analysis, **A-**, *Prof. Thomas Chen*
Stochastic Detection and Estimation, **B+**, *Prof. Todd Humphreys*
Fall 2013 Finite Elements Methods, **A**, *Prof. Mary Wheeler*
Spring 2013 GPS Signal Processing, **A-**, *Prof. Todd Humphreys*

## CONFERENCE COURSES

Fall 2015 **Topics in algebraic topology**, advised by *Prof. Andrew Blumberg*
Mainly studying A Concise Course in Algebraic Topology (e.g. cup products (LS category), Poincaré duality, (co)fibrations and (co)fiber sequences, CW complex)

## TALKS

Spring 2016 **Mathematics Undergraduate Student Talks (MUST)**, LS category and its cousins
Fall 2015 **Directed Reading Program (DRP)**, (co)fiber sequences and $\pi_3(S^2)$, mentored by *Ernest Fontes*
Spring 2015 **DRP**, What is persistent homology, mentored by *Ahmad Issa*
Fall 2014 **DRP**, Čech cohomology of projective spaces, mentored by *Dr Yuecheng Zhu*
Spring 2014 **DRP**, Classification of Du-val singularities, mentored by *Dr Yuecheng Zhu*
Fall 2013 **DRP**, How to blow up double points in an affine plane and why you should do it too, mentored by *Dr Hendrik Orem*

## MISC. EXTRACURRICULAR

2016 - now DTLA Weightlifting
2014 - 2016 **Participant**, TexTAG: Texas undergraduate Topology And Geometry conference
2013 - 2016 **Active Member**, UT Undergraduate Math Club
2011 - 2016 **Coursera, Udacity, and other MOOC experiences**
Completed with Statement of Accomplishment in Cryptography, Software Testing, Machine Learning, Database Management, Artificial Intelligence, Automata Theory, Epigenetic Control of Gene Expression, Exploring Particle World, and Classical Chinese Philosophy.
2011 - 2014 **Active Member**, Longhorn Rocket Association
May 2014 **Participant**, LeaderShape Institute
Summer 2013 Programmed and assembled FPV-enabled quad-rotor PCB-frame MAV for fun
2010 - 2011 **Active Member**, Engineering for a Sustainable World at UT Austin
2010 **Member**, IEEE Robotics and Automation Society
Participated in Robot-a-thon autonomous robot building competition

## VOLUNTEERING

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| 2016 | SXSW (comedy and planning operations crew) |
| 2015 | Introduce a Girl to Engineering Day (Ballon rockets and iterative engineering design) |
| Summer 2013 | UT Radionavigation Lab (Studying WAAS) |
| 2011 | Habitat for Humanity (Actually helped roofed and fenced a house) and Explore UT Guide |
| 2009 | Music Units Societies Everywhere (MUSE) and Bellaire Art Club |
| 2007 - 2009 | Methodist Hospital and Bellaire City Library |