

Derek Chen

Home: 11 Eileen Way, Edison, NJ 08837 ❖ Current: 606 E. Wright St., Apt. W303, Champaign, IL 61820
Cell: 732-887-1131 ❖ E-Mail: chen376@illinois.edu

EDUCATION

University of Illinois Master of Science, Aerospace Engineering	Urbana-Champaign, IL May 2016
University of Illinois Bachelor of Science, Aerospace Engineering Minor: Electrical Engineering	Urbana-Champaign, IL May 2014 GPA: 3.52/4.0

CLEARANCE, CERTIFICATION AND SKILLS

Satellite Tool Kit (STK) Certified, Analytical Graphics, Inc. (AGI)
Programming: Java, MATLAB, Python, Perl, C, HTML, PHP, Javascript, jQuery, AJAX, MySQL, CSS
Software: Pro/Engineer, Microsoft Office Visio, LabView
DoD Secret Clearance - July 2011

WORK EXPERIENCE

Air Force Research Laboratory – Contracted through SOCHE Summer Research Intern	Dayton, OH May – August 2014
<ul style="list-style-type: none">Developed a probabilistic graph model algorithm for cooperative UAV navigationImplemented robust state estimation for handling sensor data outliersAnalyzed position uncertainty estimates resultant of robust cost function estimates	
MIT Lincoln Laboratory Summer Research Intern	Lexington, MA June – August 2013
<ul style="list-style-type: none">Designed, implemented, and tested a flight planning tool for SIGINT sensor coverage in MATLABIncorporated aircraft dynamics and flight conditions for orbit coverage predictionDeveloped MATLAB-based GUI as a map tool for waypoint and coverage visualization	
Qualcomm Inc. – Government Technologies Interim Engineering Intern	San Diego, CA May – August 2012
<ul style="list-style-type: none">Set Up a Regression Test Lab Environment for mobile handset testing in PerlDeveloped Web-based GUI to communicate with testing componentsAutomated Test Procedures and Wrote Regression Test Suites for mobile handset testingAnalyzed Over-the-Air Messages and Signal Performance	
Raytheon Company Software Engineering Intern (Integration, Validation, and Testing)	Garland, TX June – August 2011
<ul style="list-style-type: none">Completed Product and Acceptance Testing for Quality Assurance and Customer PersonnelSupported Software Team in DR work offs and completed Regression Testing to ensure product stabilityRevised and Drafted Test Procedures and submitted them for CM Revision	

PROJECTS

Woof! Automated Intelligent Home Security System	Fall 2012 – Spring 2014
<ul style="list-style-type: none">Implemented an environment-learning and intelligent security system using Java, Android, PHP, MySQLInitiated the project plan and led an interdisciplinary team in developing project for UIUC-IEEE's Make-It-Happen Competition and UIUC's Engineering Open HouseDeveloped an audio-based learning system for anomaly detection and sound classificationDesigned project architecture for security sensing, mobile alerts, and home automation	
Indoor Quadrotor Positioning and Navigation	Fall 2013 – Spring 2014
<ul style="list-style-type: none">Developing a vision based motion capture system for indoor positioning.Designing a real-time guidance system for autonomous quadrotor maneuversLeading and mentoring a team through construction and completion of system	
Qey.Me	Spring 2011 – Spring 2012
<ul style="list-style-type: none">Implemented mobile based identification using QR codes using Javascript, CSS, HTML5, Java, Android	

- Led a start-up team in mobile and cloud applications involving QR codes
- Managed software development and Integration and maintained progress deadlines
- Conducted real world marketing on campus-wide Quad Day and performed data analysis

AE 442/443 Aerospace Systems Design

Fall 2012 – Spring 2013

- Designed a system for delivering Space Based Solar Power to US based ground stations
- Fulfilled role as Payload Power Specialist in researching and developing a subsystem to fulfill request for proposal requirements
- Assessed power generation budget and efficiency for generating 1 GW on earth.

GPS Receiver Data Processing

- Analyzed Raw GPS Data from a Garmin 18X Receiver
- Conducted studies on positioning and accuracy improvement
- Studied Orbit Mechanics of GPS Satellite Constellations and GPS Communications Data Structure

UIUC CubeSat Volunteer

Fall 2010 – Spring 2011

- Assisted Attitude Determination and Control (ADCS) and Communications & Data Handling (C&DH) sub-teams

RESEARCH

GAO RESEARCH GROUP directed by Professor Grace Xingxin Gao

Spring 2013 – Present

Cooperative Multi-agent Navigation

- Using sensor fusion with sensors such as relative range sensors, cameras, IMUs, and GPS, cooperatively navigate a swarm of UAVs through a GPS-challenged or GPS Denied Environment.

Precise GPS for Wind Sensing

- Developed a novel wind sensing aerostat system based on GPS positioning
- Collected data and implemented precise positioning using DGPS and carrier based signal techniques in **MATLAB**
- Performed hardware integration of multiple sensors and communication & data handling systems in **Python**
- Designed aerostat system architecture of aerostat lift and sensing subsystems

OTHER RESEARCH

UAS Video Tracking Challenge

Spring 2012

- Developed a Vision Tracking System for an autonomous UAV using **C++**, **MATLAB**
- Conceived system diagrams for proposed solution algorithm
- Implemented Kalman Filter for video-based target tracking

Airglow and Irregularities Research Group directed by Professor Jonathan Makela

Fall 2011 – Spring 2012

- Analyzed dual-band GPS data in search of Ionospheric Structures, EPBs and MSTIDs
- Implemented **MATLAB** data processing and filtering techniques to identify structures through TEC Variations
- Verified results with video captured from a PICASSO wide angle imaging system

CONFERENCE PAPERS

- Derek Chen, Liang Heng, Dan Jia, and Grace Xingxin Gao, "Distributed Array of GPS Receivers for 3D Wind Profile Determination in Wind Farms," *ION GNSS+ 2013*, Nashville, TN, Sep 2013.
 - Received **Best Presentation Award** for session A1: Remote Sensing w/ GNSS and Integrated Systems

LEADERSHIP & COMPETITIONS

IEEE - UIUC Student Branch

President

Spring 2013 – Spring 2014

VP of Membership Services

Spring 2012 – Spring 2013

Coordinated event operations and pioneered new membership events to retain and increase membership

Publicity Director

Spring 2011 – Spring 2012

- Innovated publicity strategies that increased event attendance by 75-100%

3rd place, IEEE Hackathon Fall 2012 – txtBack

Winner, Qualcomm Context Awareness Use Case Contest