Matthew Gardner

www.mgardner.me | 310.733.7681 | matthew@mgardner.me | mattga@iastate.edu

EDUCATION

IOWA STATE UNIVERSITY | Ph.D Computer Science — 2014–Now

GPA: 3.8 – *Selected Coursework:* Computational Geometry, Advanced Machine Learning, Artificial Intelligence, Problem Solving Techniques for Applied CS, Computer Graphics & Geometric Modeling, Computational Perception, Surface Modeling, Database Systems

UNIVERSITY OF CALIFORNIA, IRVINE | B.S. Computer Science — 2012–2014

GPA: 3.8

SANTA MONICA COLLEGE | Computer Science — 2009-2012

GPA: 3.4

EXPERIENCE

ISU, ROBOTICS LAB | Research Assistant — Ames, IA | Jan 2015 – Present

Current work involves integrating impact dynamics and impulsive manipulation into robotics. Research problems include:

- Building a high-speed vision system to accurately track objects, making use of Kalman filtering, image processing, GPU computing, and multithreading to ensure speed and robustness.
- Analysis of a generalized model of impact dynamics for a robotic arm manipulator interacting with 3-D objects.
- Development of an algorithm to plan motion of a robotic arm manipulator in conjunction with impact planning.

IOWA STATE UNIVERSITY | Teaching Assistant — Ames, IA | Aug 2014 – Present

- One semester as TA of graduate level course *Problem Solving Techniques for Applied Computer Science*. Includes grading and office hours on advanced topics in data fitting, optimization, curves & surfaces, calculus of variations, coordinate systems, and more.
- Four semesters as Head TA of the project course *Software Development Practices* where I implemented systems to efficiently evaluate the progress of team projects, provided technical assistance to students, and supervised TA responsibilities to ensure the success of projects and proper team collaboration of 160+ students each semester.

WORKIVA | Software Development Intern — Ames, IA | May 2015 – Aug 2015

- Implemented features for *Vessel*, a message queue in Golang used to synchronize data in Workiva's cloud services.
- Solely developed a benchmark to simulate many distributed machines communicating with a cluster of Vessels, helping identify bottlenecks and bugs, and resulting in a *20x increase in performance* after optimizations.

SMILEFISH, INC. | Mobile App Developer + Project Manager — Irvine, CA | Mar 2014 – Aug 2014

- Built the social e-commerce app **eddi.com**, a challenging project with full custom UI and a wide range of features.
- Redesigned and deployed the front and backend of *American Speechsounds*, an iOS app to improve English speech.
- Led a team through concept and design of a language-learning app for Chinese speakers learning English, producing various design and concept documentation for *TutorGroup*, a global leader in online education.

UC, IRVINE | Undergraduate Research — Irvine, CA | Nov 2013 – Mar 2014

- Developed course planning software to help the college decide courses to offer by solving a student's 4 year program of study as a nonlinear optimization problem in Java.
- Built a database extension in Node.js that stores WebRTC analytics data for use in Intel-funded research.

NUMECENT, INC. | Quality Assurance Intern — Irvine, CA | Jun 2013 – Aug 2013

- Managed test cases for validating client-server cloudpaging technology, producing 40+ bug reports.
- Wrote scripts to automate test cases, and integrated them into daily smoke and regression tests to quickly identify bugs in development code.

FBI | Intern with Cyber Division — Westwood, CA | Sep 2008 – Feb 2010

- Used various data analytics tools to organize and visualize case data for a team of agents fighting cyber crime.
- Assisted with parsing large amounts of data into formats where data analysis could then be performed.
- Networked and built a moderate-sized lab used as a "hack environment" in several investigations.

PUBLICATIONS

[1] Matthew Gardner and Yan-Bin Jia. Estimating the linear and angular velocities of a free-flying object. In ***ICRA, IEEE/RSJ*** (Submitted), Brisbane, Australia, 2018. [pdf]

[2] Yan-Bin Jia, Matthew Gardner, and Xiaoqian Mu. Batting an in-flight object to the target. Submitted to ***International Journal of Robotics Research***, 2017. [pdf] [video]

[3] Matthew Gardner and Yan-Bin Jia. Batting flying objects to the target in 2d. In ***IROS, IEEE/RSJ***, pages 3225–3232, Daejeon, Korea, 2016. [pdf]

PERSONAL PROJECTS

www.mgardner.me 2015
My personal website developed in HTML5/CSS3 and JavaScript to showcase my work and help build connections.

ISOC Ramadan 2015 2015
Built an iOS and Android app for the Islamic Society of Orange County that provides event information, registers volunteers, and collects donations, resulting in $50,000+ of donations to charity.

collab.dj: Collaborative music streaming 2014-Present
A mobile app (iOS+Android+Web+C#.NET) for users to collaborate in groups to stream music from Spotify, YouTube, and more. Users can either tune in, or party with friends using the app as a jukebox.

AWARDS

Robert Stewart Early Research Recognition Award Ames, IA | 2016
Recognition of early success in Robotics research.

Hack ISU Hackathon (1st/48) Ames, IA | 2016
Built FallWatch, an iOS+iWatch app that learns from sensor data when the user falls down, and sends out a distress signal.

Graduate Research Contest (2nd/20+) Ames, IA | 2016
Presented research on robotic batting of objects to a target in 2D.

Ingenuity Showcase (1st/100+) Irvine, CA | 2014
Showcased a course project called River, an iOS app where users can collaboratively stream music.

MedAppJam (6th/19) Irvine, CA | 2012
Built NearMiss, an iOS app for quickly reporting accidents in an effort to preempt future medical accidents that can cause harm.

National Youth Leadership Forum on National Security Washington, D.C. | 2010
Attended a week long program on building leadership and learning about various systems of U.S. National Security.

SKILLS

PROGRAMMING

Proficient: C++ ○ Java ○ Obj-C ○ C# ○ SQL ○ Matlab ○ LaTeX
Familiar: C ○ Swift ○ CSS+HTML ○ PHP ○ Javascript ○ R ○ AutoIT

LINKS

Website:// mgardner.me
Github:// mattga
LinkedIn:// mgardner91
Facebook:// matt.gardner