Matthew Gardner

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OBJECTIVE

Software developer and robotics researcher seeking a full-time position for after graduation, where I can utilize my analytical mind and passion for programming to solve challenging problems.

EDUCATION

IOWA STATE UNIVERSITY │ Ph.D Computer Science (GPA: 3.8)   2014–Now
Thesis: Motion Planning and Vision for Impulse-based Robot Tasks, **Graduation:** Spring 2020

UNIVERSITY OF CALIFORNIA, IRVINE │ B.S. Computer Science (GPA: 3.8)   2012–2014

SANTA MONICA COLLEGE │ Computer Science (GPA: 3.4)   2009-2012

EXPERIENCE

ISU, ROBOTICS LAB │ Research Assistant   Ames, IA │ Jan 2015 – Present
 – Currently developing a high-speed vision system to accurately track an object's pose and motion, involving Kalman filtering for nonlinear systems, image processing, and parallelization via the CPU and GPU.
 – Analysis of imaging models, flight dynamics, and impact dynamics for various robotics tasks.
 – Developed an algorithm with motion and impact planning for a robotic arm batting an object to a target.

IOWA STATE UNIVERSITY │ Teaching Assistant   Ames, IA │ Aug 2014 – Present
 – One semester as TA of graduate level course *Problem Solving Techniques for Applied CS*. Including grading and holding office hours on topics in data fitting, optimization, differential geometry, calculus of variations, and more.
 – Six semesters as Head TA of the project course *Software Development Practices*. Responsibilities include managing 8+ TAs, the team projects of 200+ students, and streamlining various processes within the course.

GOLDMAN SACHS │ Summer Assiciate   New York, NY │ May 2018 – Aug 2018
 – Lead a team of three through design, development, and testing of functionality for a visual programming tool used by more than 1,500 non-developers.
 – Utilized test-driven development to implement features in Java providing interoperability with SharePoint, Excel, and Email via the Apache Spark engine for big data.

WORKIVA │ Software Development Intern   Ames, IA │ May 2015 – Aug 2015
 – Implemented features to increase performance of *Vessel*, a message queue in Golang used to synchronize data throughout Workiva's cloud services.
 – Solely designed and built a benchmark to simulate 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 unique project with fully custom UI and a wide range of features.
 – Design, implementation, and deployment of *American Speechsounds*, an iOS app to improve English speech.
 – Led a team of 5 through concept and design of a language-learning app for Chinese speakers learning English, including delivery of documentation to *TutorGroup*, a global leader in online education.

NUMECENT, INC. │ Quality Assurance Intern   Irvine, CA │ Jun 2013 – Aug 2013
 – Managed test cases for client-server cloudpaging technology, nearly doubling the number of reported bugs.
 – Wrote scripts to automate test cases and configured them as daily smoke and regression tests.

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 "hacking 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. <http://robotics.cs.iastate.edu/papers/ICRA18b.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. <http://robotics.cs.iastate.edu/papers/IJRR17.pdf> <https://youtu.be/dGBevZ54E3s>.

[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. <http://robotics.cs.iastate.edu/papers/IROS16.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.

Undergraduate Research at UCI   2013-2014
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.

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.

ACTIVITIES & AWARDS

Reviewer of Contributions to IEEE Robotics Conferences and Journals   2016-2018
Conferences: IROS, ICRA. Journals: IJJR, RA-L

Science Bound: STEM Outreach Program   2016-2018
Presented robotics concepts, motives, and demo to undepriviliged K-12 students.

Robert Stewart Early Research Recognition Award   Ames, IA | 2016

Hack ISU Hackathon (1st/48)   Ames, IA | 2016
Built FallWatch, an iOS+iWatch app that learns 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 efficiently reporting "near miss" incidents as a preventative measure.

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 (>5000 LOC): C++ ∘ Java ∘ Obj-C ∘ C# ∘ Matlab ∘ LaTeX
Familiar (<5000 LOC): SQL ∘ C ∘ Swift ∘ CSS+HTML ∘ PHP ∘ Javascript ∘ R ∘ AutoIT

COURSEWORK
Selected graduate-level coursework: *Computational Geometry, Machine Learning, Optimization, Artificial Intelligence, Computer Graphics, Geometric Modeling, Computational Perception, Surface Modeling, Database Systems*

LINKS

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