

Marc C. Allen

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LOCATION 320 Del Mar Blvd. #7, Pasadena, CA 91101

OBJECTIVE

An engineering position where I can apply my skills, leadership, education and creativity to challenging technical projects while contributing to the advancement of science and research.

EXPERIENCE

Phat Energy – Designed and built an embedded system to acquire data from multiple photovoltaic solar panel inverters and transmit the data wirelessly to an external web server, enabling customers to access their solar production status and history.
R&D Consultant
Pasadena, CA
August 2008/Current

NASA Jet Propulsion Laboratory – Led development of next-generation ring bus communication driver for the Advanced Mirror Design (AMD) project, enabling high-rate communication and distributed synchronization.
Flight Software Engineer – Designed and implemented a camera-link imaging system for real-time optical control algorithms.
Pasadena, CA – Responsible for many other aspects of AMD instrument software, including autocoding, integration and test, performance analysis, device simulation, and software infrastructure.
March 2007/Current – Architected and implemented the flight and operations software for the PBTB imaging spectrometer using a high speed digital video acquisition system.
– Developed a high-performance image processing utility for the MaRS imaging spectrometer, allowing rapid calibration and data analysis. Supported instrument deployment to remote site.

Naval Research Laboratory – Designed and constructed a tiled-display visualization system for analyzing high resolution solar imagery from the STEREO satellite mission.
Engineering Intern – Developed a high performance movie editing library enabling real-time user interaction and hardware accelerated image processing and calibration, as well as a graphical IDL interface.
Washington, DC
June 2006/August 2006

Space Physics Research Laboratory – Designed and implemented a computer system to track and monitor public transit vehicles using GPS and cellular modems. Recognized on a pending patent.
Research Assistant – Developed a computer system to track the location and monitor the instrument payload of a near-space weather balloon.
Ann Arbor, MI – Assisted in developing a proposal for a buoy-based magnetometer, including modeling and simulation of the inertial navigation subsystem.
May 2005/Current

EDUCATION

University of Michigan, Ann Arbor

M.E. Space Systems Engineering, December 2006

B.S. Computer Science, August 2005

RELEVANT COURSEWORK

Computer Graphics
Computer Security
Embedded Control Systems
Operating Systems

Parallel Computing
Real-time Computing
Remote Sensing
Software Engineering

Space Mission Design
Space/Plasma Physics
Space Policy and Management
System Analysis and Identification

RELEVANT PROJECTS

SPACE SYSTEMS – Created a data subsystem point design for a satellite mission, including data budget and image processing analysis.
Remote Sensing Satellite Mission – Managed development and construction of an inexpensive, high performance, tracking communication system for low earth orbit satellites using COTS components.
– Assisted in managing a student spacecraft design project. One of three students selected to deliver a presentation to the industry sponsor's CEO.

- REAL-TIME COMPUTING
Wireless Network Performance
- Led a team of students to design an ad-hoc wireless network simulation tool, allowing evaluation of real-time performance using different routing algorithms.
 - Implemented reference version of Dynamic Source Routing to demonstrate effectiveness of simulation.
 - Designed graphical tool to visualize communication events, allowing analysis of system behavior.
- PARALLEL COMPUTING
Parallel N-body System Simulation
- Designed a parallelized N-body simulation algorithm to efficiently model particle systems using quad-tree decomposition methods. Simulation ran on up to 64 nodes and realized near linear speedup.
 - Created an OpenGL visualization tool to analyze simulation results.

SERVICE

- FIRST Robotics**
Control Software and Electronics Mentor
07/2007-Current
- Mentored San Marino high school students in designing, building, and operating a robot for the FIRST robotics competition.
 - Taught students fundamentals of programming, electronics, control systems, fabrication, and teamwork.
 - Team was successful in advancing to regional playoff.
- Project : Possibility**
VP of Technology, Board of Directors
05/2007-05/2008
- Founding member of a non-profit 501c3 corporation dedicated to designing accessible technology for the disabled. Served as Vice President of Technology and member of the board of directors.
 - Led development of competitive educational programs for college students to work in teams on accessible software and hardware projects. Teams worked with industry mentors and won prizes.
 - Developed guitar tuner software for the blind using speech recognition and text-to-speech technologies.

SKILLS

- Programming Languages
Operating Systems
Hardware Technologies
Software Technologies
Engineering Tools
- C/C++, IDL, Java, Matlab, Python, SQL
VxWorks, Unix, Linux, Solaris, MacOS 9/X, Windows
Camera Link, Compact PCI, DC Motors, Microcontrollers, Optical Encoders, Oscilloscope, Spectrum Analyzer
.NET, Apache, FFTW, JNI, MPI, MySQL, OpenGL, OpenMP, Oracle, PostgreSQL, OpenSSL, Swig, TCP/IP, XML/XSL
Apple Xcode, Eclipse, Magicdraw UML, Maple, Matlab, Microsoft Visual Studio, Netbeans, Simulink, Satellite ToolKit, Wind River Workbench/Perftools

INTERESTS

Technology, search and rescue, amateur radio, recording/performing music, mountaineering, rock climbing, cycling.