

# ANDREW SCOTT GARDNER

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## CONTACT

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## WORK[1]

### **R&D Software Engineer IV.**

LUNAR AND PLANETARY LABORATORY, DEPARTMENT OF ASTRONOMY, and ARIZONA SPACE INSTITUTE, UNIVERSITY OF ARIZONA. 2012/01 - PRES.

2023 - PRES.

⟨0⟩ **ASI Multi-Mission Operations Center:** Software architecture, development to support mission planning and ground data systems for Pioneer-scale missions. *Jakarta EE, Payara, Java, ActiveMQ, PostgreSQL, NAIF SPICE.*

2020 - PRES.

⟨1⟩ **MMT Adaptive Optics:** Software development and system integration for real-time adaptive optics system. *Java, C, C++, Linux, web components, STM32, Python.*

2017 - PRES.

⟨2⟩ **OSIRIS-REx:** Operations engineering. Process, UI testing automation. *Java.*

2012 - PRES.

⟨3⟩ **2001 Mars Odyssey GRS instrument suite:** Data reduction and analysis. Data sets for NASA Planetary Data System (PDS). *Java EE, Payara, MATLAB, Fortran.*

2012 - PRES.

⟨4⟩ **MSL (Curiosity) Dynamic Albedo of Neutrons (DAN):** Science operations. Query builder with Java FX. Data sets for NASA PDS. *Java FX, C.*

2014 - PRES.

⟨5⟩ **LRO Lunar Exploration Neutron Detector (LEND):** Servlets. Query builder with Swing. Data reduction. Data sets for NASA PDS. *Java, MATLAB, C++.*

2012 - 2017.

⟨6⟩ **MESSENGER GRS and XRS.** Servlets, Swing, Netbeans RCP. Data reduction. Data sets for NASA PDS. *Java, C++.*

## WORK[0]

### **Senior Software Engineer II. Raytheon. 2001/07 - 2011/12.**

2008 - 2012.

#### **BSP REA, PCI Express system integrator, algorithm analyst.**

⟨1⟩ REA for PowerPC BSP for VxWorks 6. PCI Express switch system integration.

⟨2⟩ Analysis and optimization of image processing, computational linear algebra.

2005 - 2012.

#### **Instructor, Raytheon Learning Institute.**

⟨1⟩ Design, develop, and deliver lab-based Embedded Software Practicum.

⟨2⟩ Develop and deliver Integration and Test, unit of Embedded Software for Missiles.

2006 - 2009.

#### **Software integration REA, SDB-II.**

REA for 32b PowerPC VxWorks 6 BSPs. Software for high throughput messaging over PCI Express. System integration for captive flight test and flight line test.

2006 - 2008.

#### **Software Architect, RMS Software Center.**

Real-time operating systems trade study. RT middleware trade study. Co-author of architecture and standards documents.

2001 - 2006.

#### **Embedded Software and HWIL Simulation Technical Lead.**

Technical and team lead for **Digital Scene Matching Area Correlator (DSMAC)** navigation aiding subsystem software development. Flight software for C6000 DSP. OpenGL real-time camera simulation. Automated test and verification system.

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EDU.	<p><b>M.L.S.</b> Legal Studies with a concentration in human rights law. <a href="#">University of Arizona, James E. Rogers College of Law</a>. 2020.</p> <p><b>M.Eng. Electrical and Computer Engineering.</b> <a href="#">University of Arizona, Dept. of Electrical and Computer Engineering</a>. Capstone project: <i>System observability: Understanding hardware behavior after deployment</i>. 2010.</p> <p><b>B.S. Electrical and Computer Engineering.</b> <a href="#">Carnegie Mellon University</a>, 2001.</p> <p><b>B.A. Spanish.</b> <a href="#">Carnegie Mellon University</a>, 2001.</p>
PUB.	<p>Johnson, Vaz, Montoya, Morzinski, Patience, Sivandandam, Brusa, Durney, <b>Gardner</b>, et. al. <a href="#">Tuning the MAPS adaptive secondary mirror: actuator control, PID tuning, power spectra, and failure diagnosis</a>. Proc. SPIE 13149, Unconventional Imaging, Sensing, and Adaptive Optics 2024, 131490H (7 October 2024).</p> <p>Balram-Knutson, Lambert, Audi, Becker, Boynton, Dean, Enos, Fitzgibbon, Galinsky, Garcia, <b>Gardner</b>, et. al. <a href="#">Science Operations Planning and Implementation for the OSIRIS-REx Mission, Part 2: Toolkit</a>. 2022 IEEE Aerospace Conference (AERO), 2022, pp. 1-19.</p> <p>Anugu, Durney, Morzinski, Hinz, Sivanandam, Males, <b>Gardner</b>, et. al. <a href="#">Design and development of a high-speed visible pyramid wavefront sensor for the MMT AO system</a>. SPIE Astronomical Telescopes + Instrumentation. Proceedings Volume 11448, Adaptive Optics Systems VII; 114485J (2020).</p> <p>Vaz, Morzinski, Montoya, Fellows, Ford, <b>Gardner</b>, et. al. <a href="#">Laboratory testing and calibration of the upgraded MMT adaptive secondary mirror</a>. SPIE Astronomical Telescopes + Instrumentation. Proceedings Volume 11448, Adaptive Optics Systems VII; 114485L (2020).</p> <p>Bodnarik, Mitrofanov, Boynton, Hamara, Harshman, <b>Gardner</b>, et. al. <a href="#">LEND CSETN Circular and Elliptical Orbital Data Processing</a>, 45th Lunar and Planetary Science Conference, 2014.</p> <p>J. C. Lee, <b>A. S. Gardner</b> and R. Lysecky, <a href="#">Hardware Observability Framework for Minimally Intrusive Online Monitoring of Embedded Systems</a>. 2011 18th IEEE International Conference and Workshops on Engineering of Computer-Based Systems, 2011, pp. 52-60.</p>
CERT.	<p><b>Foundations of Effective Legal Research.</b> 2020/12.</p> <p><b>Proficiency Certification for Legal Research.</b> LexisNexis. 2019/08.</p> <p><b>Enterprise Information Security Certificate</b>, University of Arizona, Eller College of Business. 2018/05.</p> <p><b>Certified Six Sigma Green Belt</b>, American Society for Quality. 2011/12.</p>