

Kyle Winfree
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Education:

Masters of Science and Engineering in Robotics, graduating December 2008. University of Pennsylvania, Philadelphia, PA.

Bachelor of Science in Physics, December 2004. Northern Arizona University (NAU), Flagstaff, AZ.

Student Research and Internships:

NASA Space Grant (\$1500) awarded for research in Mobile Platform Implementation of Machine Vision algorithms. Simplified the algorithms for a mobile platform designed to navigate around objects on a 2-dimensional plane. NAU, Flagstaff, Arizona. 2002 - 2003.

NASA Space Grant (\$1500) awarded for research in Machine Vision. Developed algorithms to process stereoscopic images and create a three-dimensional model of the space in front of two parallel cameras. NAU, Flagstaff, Arizona. 2001 - 2002.

NASA Sharp Plus summer internship. Developed infra-red proximity module for use on university robo-soccer team robots. University of New Mexico, Albuquerque, New Mexico. 1997.

Recent Work Experience:

US Geological Survey, Web Developer and Space Scientist (GS 7, April 2007 - June 2007; independent contractor, April 2005 to March 2007). Responsible for developing, testing, and maintaining websites meeting strict US Government guidelines for accessibility and content. Web master for mars-ice.org, moon-cal.org, and mars-dunes.org. Developed a "Google Maps" like prototype interface (Ajax based) to search/query interface of the Uniform Planetary Coordinate Database (UPC) and tracked residual CO₂ on the South Polar Ice Cap of Mars. This intra- and interannual study made use of THEMIS, OMEGA, and Mars Orbital Camera data.

Coconino Community College, Instructor, *University Physics I with Calculus* lecture and lab, fall semester (August to December) 2005. Developed and instructed physics (with calculus) curriculum for first year physics students, developed and instructed lab material for the accompanying lab class.

NAU NASA AIMER Program, Science Outreach Coordinator, June 2004 to April 2005. Brought the AIMER mobile lab, with computers and telescopes, to many K-12 Indian Reservation schools in Arizona that had limited or non-existent science programs. Visited the schools for two to five days each, providing in-lab instruction for about thirty-five students daily, introductory robotics classes for gifted classes, and culturally sensitive public night sky observation sessions.

NAU Summer Enrichment Program Teaching Assistant (TA) and AIMER Program Instructor, May 27th to June 23rd 2004. TA position included development and teaching of class curriculum, including hands on labs, in a team teaching environment. There were three one-week sessions of "academically at-risk," hearing, and visually impaired students.

NAU Physics I Lab Manual Co- Editor and Author, May to July 2004.

NAU Lab Assistant for undergraduate class Electronics for Physics Students, Spring 2004.

Other Honors and Awards:

VICA (Vocational Industrial Clubs of America), silver medalist in electronics at state level. 1996 - 1999.

TEAMS (Tests of Engineering Aptitude and Mathematics), 1st place varsity team leader. 1998 - 1999.

Eagle Scout, Boy Scouts of America, September 1995.

Featured in National Geographic documentary film, *Inventors and Inventions*, 1994.

Best of Show at New York State LEGO Competition, electromechanical robotic arm, 1993.

Science Olympiad Medalist, voted Most Valuable Player, 1990 - 1991, 1993 - 1995.

Skills and Certifications:

Amateur Radio Operator License, Federal Communications Commission (2004).

Open Water Scuba Diver Certification, NAUI Worldwide (2001, 1992).

Computer Skills: Experienced with use and installation of a large variety of Microsoft, Mandriva Linux, Suse Linux, and Unix software packages. PostgreSQL and MySQL databases. HTML and XML markup. Programming and scripting in PHP, Perl, Bash Shell, Java, Javascript, Visual Basic, and PBasic. Have designed and assembled high reliability web, database, and file servers and desktops.

Electronics Skills: Breadboarding, prototyping, fabrication and design of printed circuit boards, and soldering of surface and discrete mount components.

Machine Shop Skills: Mill, lathe, laser cutter, and other common power tools.

Memberships and Extracurricular Activities:

American Association for the Advancement of Science (2007 - present)

Linux Users of Northern Arizona (2005 - 2007)

NAU NASA ANSR (Arizona Near Space Research) Lead vehicle driver / participant involved with radio tracking high altitude balloons. Also helped students with preflight final preparations. (April 17th, 2004 and April 29th, 2005)

Team Leader of the NAU High Altitude Balloon Satellite Project. Organized and coordinated a group of seven graduate and undergraduate students working on a high altitude balloon research project with the NAU Space Grant Consortium. (January to May 2005)

Coconino Amateur Radio Club (2004 - 2006)

Hobbies and Interests:

Radio controlled model aircraft, robotics, and information technology.

Outdoor recreation.

Spending quality time with family and friends.

Abstracts and Presentations:

- Winfree, K. N., and Titus, T. N. 2007. *Trends in the South Polar Cap of Mars*. The Seventh International Conference on Mars, July 9 - 13, 2007. Pasadena, California. (abstract)
<http://www.lpi.usra.edu/meetings/7thmars2007/pdf/3373.pdf>
- Becker, K. J. et al. 2007. *The Unified Planetary Coordinates Database*. 38th Lunar and Planetary Sciences Conference, March 12 - 16, 2007. League City, Texas. (abstract)
<http://www.lpi.usra.edu/meetings/lpsc2007/pdf/2022.pdf>
- Titus, T. N., Prettyman, T. H., and Winfree, K. N. 2006. *How thick is the South Polar Residual Cap CO₂ ice cover*. Fourth International Conference on Mars Polar Science and Exploration, October, 2 - 6, 2006. Davos, Switzerland. (abstract and poster)
http://www.lpi.usra.edu/meetings/polar2006/pdf/download/alpha_t-z.pdf
<http://classicmagicstudios.com/pubs/MarsPolar4Poster.v2.pdf>
- Winfree, K. N. and Titus, T. N. 2006. *Estimation of CO₂ coverage on Mars' South Pole: An interannual assessment*. 37th Lunar and Planetary Sciences Conference, March 13 - 17, 2006. League City, Texas. (abstract and poster)
<http://www.lpi.usra.edu/meetings/lpsc2006/pdf/2283.pdf>
<http://classicmagicstudios.com/pubs/LPSC2006Poster.v10.pdf>
- Winfree, K. N. and Delinger W. 2003. *Mobile platform implementation of machine vision*. Results presented at NASA Space Grant Symposium, April 2003. Arizona State University, Phoenix, Arizona.
- Winfree, K. N. and Delinger W. 2002. *Machine Vision*. Results presented at NASA Space Grant Symposium, April 2002. University of Arizona, Tucson, Arizona.

References:

Available upon request.