Samuel Phillip Pullen ("Sam")

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EDUCATION

Stanford University; Stanford, California
  Ph.D., Aeronautics and Astronautics
   Graduation Date: June 1996 GPA: 3.9/4.0
   Thesis title: *Probabilistic Engineering Design Optimization: Applications to Spacecraft and Navigation Systems*
  M.S., Aeronautics and Astronautics (emphasis on guidance and control systems)
   Graduation Date: June 1990 GPA: 3.8/4.0

Massachusetts Institute of Technology; Cambridge, Massachusetts
  S.B., Aeronautics and Astronautics
  S.B., History (emphasis on modern Europe, technology strategy and development)
   Graduation Date: June 1989 GPA: 4.8/5.0

EXPERIENCE

Senior Research Engineer, May 1999 – present (part-time since August 2011)
(Research Associate from July 1996 – April 1999)
  Hansen Laboratories; Stanford University; Stanford, California

- Head of the Ground Based Augmentation System (GBAS)/Local Area Augmentation System (LAAS) research project, overseeing 5 – 15 engineers and graduate students working on algorithm research, safety assurance, prototype development, and test and validation.

- Developed, installed, and validated the first LAAS ground system prototype (the "Integrity Monitor Testbed") that included all elements and algorithms needed to protect user safety.

- Supported the FAA in developing specifications, algorithms, and test procedures for vendor-developed systems that evolved into the SLS-4000 LAAS Ground Facility. Several key components were first developed and tested in Stanford's Integrity Monitor Testbed.

- Developed original methods for spacecraft reliability and risk assessment for the Gravity Probe-B Relativity Mission developed at Stanford under NASA/MSFC management. This approach provides more useful guidance for late-stage development and testing.

- Provided research support to other projects, including WAAS and JPALS. Developed the first comprehensive predictions of WAAS performance and availability and extended these tools to support WAAS architecture design optimization.

- Taught graduate-level course, "Space Mechanics," in 1999-2000. Guest lecturer for "Global Positioning Systems" and other courses in Aero/Astro department.

Consultant, January 1996 – present (self-employed and via NavAstro, Los Gatos, California)

- Technical support of integrity algorithm design, test, and validation for multiple companies developing GBAS ground and airborne equipment.

- Expert witness analysis, report generation, and testimony concerning GPS/WAAS navigation and receiver algorithms as part of litigation in Montréal, Québec Superior Court.
- Technical support of system architecture, algorithm design, and requirements assessment for the U.S. Navy Sea-Based JPALS Program.
- Technical support of the GPS III Modernization effort under contract to the DOD GPS Joint Program Office, including requirements definition, civil augmentation system modeling, and performance simulation.
- Design and development of onboard GPS satellite self-integrity monitoring based on the principles and algorithms developed for LAAS (patent issued – see below).
- Expert witness deposition and testimony concerning GPS navigation and receiver algorithms as part of litigation in San Diego County, California Superior Court.
- Technical support of the Johns Hopkins University Applied Physics Laboratory GPS Risk Assessment, including problem formulation, performance simulation, and risk analysis.
- Tutorial presentations on LAAS fundamentals, algorithms, and aviation applications.
- Space satellite and constellation reliability analysis, including pre-launch reliability estimates (using thesis research methodology) and revisions after observing initial behavior in orbit.

Researcher, *on-site*: June - December 1990; *consultant*: January 1991 – September 1997
The RAND Corporation; Santa Monica, California
Examined the current and proposed future basing structures of the U.S. Air Force in Europe.
Developed a software tool to model and assess future aircraft basing options. The results
 of this study were validated by subsequent experience as aircraft were withdrawn from Europe.

ACADEMIC AND PROFESSIONAL SERVICES

- **Associate Editor for Navigation,** *IEEE Transactions on Aerospace and Electronic Systems*, October 2007 – present
- **Tutorial Instructor** on GNSS augmentations and integrity at ION GNSS 2011 and 2012
- **Reviewer** for IEEE, AIAA, ION, and other journals, 1998 – present
- **Institute of Navigation (ION) Council Member,** January 2003 – January 2005
- **Session Chair** at multiple ION, IEEE, and other conferences

AWARDS AND HONORS

- Institute of Navigation (ION) *Early Achievement Award* (1999)
- ION GPS/GNSS Conference "Best Paper" Awards (1999, 2000, 2001, 2009)
- National Science Foundation Graduate Fellowship (1989)
- Tau Beta Pi and Sigma Gamma Tau engineering honor societies at MIT (1987, 1988)

OTHER SKILLS

- Japanese language ability and extensive familiarity with Japanese business and personal culture, including NSF-supported and consulting engagements in Japan.
- Extensive knowledge of finance, investing, and economics through consulting and private study.
- Proficient in programming, engineering/statistics applications, and spreadsheet applications.

PUBLICATIONS

- See full-length CV at http://www.stanford.edu/~spullen/Sam%20Pullen%20CV%20April-2012.pdf