

# Daniel Zwillinger, PhD

Newton, MA 02465  
DanZwillinger@gmail.com

## OVERVIEW

I am looking for a position to apply my substantial mathematical knowledge and mastery of analytical tools to solve challenging problems in engineering and in the sciences.

I have forty years of experience solving technical and business problems for large and small companies, government labs, consulting, and academia.

Active DoD Top Secret clearance. Previously held NSA clearance.

## TECHNICAL STRENGTHS

- ✓ Experienced in identifying and resolving the key issue of a technical problem.
- ✓ Extensive understanding of algorithm design, data analysis, modeling & simulation, and software requirements.
- ✓ Skilled in leveraging computer software tools such as Matlab, Mathematica, and Python.

## BUSINESS STRENGTHS

- ✓ Six Sigma ( $6\sigma$ ) black belt; both Raytheon and ASQ certified.
- ✓ Project and personnel management experience with fiscal responsibility.

## COMMUNICATION STRENGTHS

- ✓ Excellent technical communication skills. Wrote several technical books.
- ✓ College professor for four years at RPI (Rensselaer Polytechnic Institute)

## EDUCATION

PhD	<a href="#">California Institute of Technology</a>	Applied Mathematics	1983
BS	<a href="#">Massachusetts Institute of Technology</a>	Mathematics	1978

## INDUSTRIAL EXPERIENCE

**BAE Systems – Chief Scientist** (2018 – 2025) Burlington, MA

Led the creation of research proposals for AFRL, DARPA, DoD, DoS, DTRA, and IARPA. Led multiple IRAD projects involving Game Theory and tracking techniques. Led multiple research teams investigating Game Theory and Koopman Analysis. Led team which created a patented decentralized data fuser. Mentored many junior scientists. Principal Investigator (PI) on research programs:

- Determined if geographically distributed drones are headed to a common location (DARPA)
- Game Theory analysis to optimize attacking and defending of supply chains (AFRL)
- Designed and evaluated COAs (Courses of Actions) aligned with Surprise, Blinding, Offensive themes (AFRL)
- Used Koopman models to create fast simulators for deep learning by autonomous vehicle (DARPA).

**Autoliv – Validation Manager** (2015–2018) Lowell, MA

Autoliv was the world's largest manufacturer of automobile radars. My team designed and created data collection systems, performed environmental testing, and determined radar performance with a fleet of 19 vehicles & 6 drivers. Improved effectiveness, efficiency, capability, and capacity by process improvements. Was resident statistician. Created models for LIDAR object classification, radar calibration & synchronization. Experienced with ISO 17387.

**Raytheon – Senior Principal Systems Engineer & Six Sigma Black Belt** (2001–2015) Sudbury, MA

**Systems Engineering**

- SW Requirements lead for C-Band Radar Project Line
- Test lead for IRAD radar calibration
- Led systems engineering, usability, & deployment for improved Time Card system
- SW requirements lead for Pre- and Post-Mission Software for Cobra Judy Replacement (CJR)
- Test lead for Multiple Hypothesis Tracking.

**Six Sigma**

- \$42M benefit (audited) from my improvement projects
- Twice won "President's Best Six Sigma Project of the Year"
- Improved VV&A (Verification, Validation & Accreditation) process for Zumwalt destroyer (DDG-1000).
- Improved Patriot Missiles Rolling Wave process
- Subject Matter Expert (SME) in Design for Six Sigma (DFSS), Critical Chain Program Management (CCPM), and Voice of the Customer (VoC)

**Additionally**

- Lead for "Trust in Autonomous Systems" project
- Four-time winner of "Raytheon Innovation Challenge."
- Managed (and frequent teacher of) Six Sigma white/yellow belt training for 5 years.

**Other professional positions** Held consulting, staff, and scientist positions at

- [Exxon Research and Engineering](#) 1981–1983 Summer positions
- [The MITRE Corporation](#) 1987–1990
- [Bolt Beranek & Newman \(BBN\)](#) 1992–1994
- [IronBridge Networks](#) 1999–2001
- [Sandia Laboratories](#) 1979
- [Jet Propulsion Laboratory \(JPL\)](#) 1980 & 1981
- [Institute for Defense Analysis \(IDA\)](#) 1987

Experienced in multiple application areas including: queueing theory for terabit routers, cryptographic analysis for the NSA, design of thin film optical interference filters, communication theory for NASA’s deep space net, acoustics/sonar for geo-prospecting and submarines, and cost estimation for geothermal wells.f

## ENTREPRENEURIAL EXPERIENCE

1. Founded an applied engineering consulting firm, [Aztec Corporation](#) (1990-1999). Handled business development, project and personnel management, proposal writing, and client negotiations.
  - Created first release of MATLAB’s statistics toolbox ([The MathWorks](#)).
  - Principal investigator on [Air Force](#) SBIR contracts to develop automated-test equipment (ATE).
  - Managed [Department of Transportation](#) SBIR contract: developed CAD tools for luggage simulations.
  - Rewrote the mathematical reference manual for the computer language [Macsyma](#).
2. Co-founder of [China Spirits Corporation](#) (2014–2017); manufacturer of Chinese liquors.
3. Created and sold US patent #9,412,280 to Uber (patented in 4 countries).

## ACADEMIC EXPERIENCE

Assistant Professor of Mathematics & Computer Science at [Rensselaer Polytechnic Institute](#) (1983–1987).

Taught graduate and undergraduate courses in information theory, probability, statistics, linear algebra, discrete mathematics, differential equations, complex variables, and advanced calculus. Published papers on wave theory, information theory, materials engineering, and algorithmic design.

- Judge for annual undergraduate [Mathematical Contest in Modeling](#) (administered to more than 800 schools internationally). Created several of the competition problems. (1992–2012, 2025)
- Appointed a visiting SIAM ([Society of Industrial and Applied Mathematics](#)) lecturer (1992–1999)
- Appointed to Technology/Engineering Advisory Council for the [Massachusetts Board of Ed](#) (2000–2003)

## PUBLISHED BOOKS

- Editor-in-chief of 30<sup>th</sup>–33<sup>rd</sup> editions of [Standard Mathematical Tables and Formulae](#) (CRC, 1995-2018), an extremely successful reference book (first edition in 1928) with two million copies sold (all editions).
- Authored two reference books - each was “Book of the Month” for the Library of Science book club:
  - [Handbook of Differential Equations](#) (Academic Press, 1<sup>st</sup>–4<sup>th</sup> editions, 1989–2021; CD-ROM 1997)
  - [Handbook of Integration](#) (Jones and Bartlett, 1992).
- Co-authored [Standard Probability and Statistics Tables](#) (CRC, 2000)
- Editor-in-chief of [Tables of Integrals, Series, and Products](#) (Academic Press, 6<sup>th</sup>–8<sup>th</sup> editions 2000–2014)
- Co-authored [Introducing Game Theory and Its Applications](#), 2<sup>nd</sup> edition (CRC, 2024)

## PUBLISHING – OTHER

- Advisory editor for [Handbook of Chemistry and Physics](#) (CRC, 85<sup>th</sup>–97<sup>th</sup> editions, 2004–2016).
- Editor-in-chief of CRC’s “[Advances in Applied Mathematics](#)” book series (CRC, 2013-present) <https://www.crcpress.com/Advances-in-Applied-Mathematics/book-series/CRCADVAPPMTH> -- 48 books in series
- Recent publications
  - “[Six Sigma Tools in Six Minutes](#),” <https://www.sixsigmainsixminutes.com/>
  - “[Voting Power of Teams Working Together](#),” <http://arxiv.org/abs/1312.3394>
  - “[Kuhn Poker with Cheating and Its Detection](#),” <https://arxiv.org/abs/2011.04450>
  - “[As Easy as 1, 3, 9?](#),” *Six Sigma Forum Magazine*, Aug 2013
  - “[The ‘Trust V’: Building and Measuring Trust in Autonomous Systems](#),” Chapter 4 in *Robust Intelligence and Trust in Autonomous Systems*, April 2016

## OTHER

- Home page at [www.mathtable.com/zwillinger/](http://www.mathtable.com/zwillinger/)
- Private pilot. Enjoy travelling and have vacationed in 40+ countries.

