

# Eliot Jacobson, Ph.D.

## Jacobson Gaming, LLC

1-805-682-1641  
eliot@jacobsongaming.com

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### EDUCATION:

- **Ph.D., Mathematics, 1983**, University of Arizona, Tucson, Arizona
- **M.S., Mathematics, 1981**, University of Arizona, Tucson, Arizona
- **B.A., Mathematics, 1979**, Humboldt State University, Arcata, California (Cum Laude)

### PROFESSIONAL POSITIONS:

- **Owner/Consultant**, Certified Fair Gambling, 2006 – present.
  - **Owner/Consultant**, Jacobson Gaming, LLC, 2006 – present.
  - **Consultant**, Raving Consulting, Reno, 2009 – present.
  - **Consultant**, CDC Consulting, Las Vegas, 2004 – 2009.
  - **Vice President**, Integrity International, Santa Barbara, California, 1998 – present.
  - **Visiting Professor, Lecturer**, Department of Computer Science, UCSB, 1998 – 2009.
  - **Lecturer**, Department of Electrical Engineering, UCSB, 2000 - 2005.
  - **Assistant/Associate Professor**, Department of Mathematics, Ohio University, Athens, Ohio, 1983 – 1998.
  - **Adjunct Professor**, Department of Computer Science, Ohio University, Athens, Ohio, Summer, 1996.
  - **Intern**, Frognet, inc. (www.frognet.net, Internet Service Provider), Athens, Ohio, Winter/Spring, 1996.
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## COMPUTER SCIENCE

### COMPUTER SCIENCE EXPERIENCE:

- **Operating Systems:** DOS, Windows, UNIX, LINUX, VMS, and others.
- **Programming Languages:** C, C++, JAVA, Fortran, Pascal, Basic, and others.
- **Software:** Most standard Windows, UNIX, and Internet applications.
- **Systems Administration:** UNIX systems administration experience, specializing in Solaris.
- **World Wide Web:** Webmaster, web developer.

### COMPUTER PROGRAMMING SPECIALTIES:

- Casino game statistical simulations, edge analysis, strategy analysis, and fairness auditing.
- Specialty areas for casino game analysis include: Blackjack, Poker, Video Poker, Pai Gow Tiles, Baccarat, Craps and Roulette.
- Plagiarism detection software for computer programs written in C, C++, and Java.

### COURSES TAUGHT IN COMPUTER SCIENCE AT UNIVERSITY OF CALIFORNIA, SANTA BARBARA:

- Introduction to Computer Programming and Organization (JAVA, C/UNIX, and Fortran).
  - Introduction to Computer Programming. Programming in C.
  - Data Structures in JAVA.
  - Discrete Structures.
  - C, C++ and UNIX
  - Introduction to Data Structures and Algorithms in C.
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## GAMING

### BOOKS:

- Eliot Jacobson, *"Contemporary Casino Table Game Design,"* ISBN 978-1-883423-17-9, 242 pages, Blue Point Books, May, 2010.
- Eliot Jacobson, *"The Blackjack Zone,"* ISBN 1-883423-10-4, 188 pages, Blue Point Books, January, 2005.

### SAMPLE GENERAL GAMING CONSULTING:

- Analysis of casino games, bingo, and slot machines to determine house edge.
- Auditing online Internet casinos for fairness.
- Development of online Internet casino software for specific games.
- Analysis of casino games for vulnerability to cheating or other advantage opportunities.
- Secret shopping and market analysis for casino clients.
- Development of security software for automatic real time analysis of casino play.
- Development and analysis of casino promotions.

### SAMPLE OTHER PUBLICATIONS IN GAMING:

- Eliot Jacobson, *"New Table Games at G2E, 2005,"* Table Talk, vol. 1, #6, April 2006, CDC Consulting.
- Eliot Jacobson, *"An Introduction to Risk,"* Blackjack Insider Newsletter #65, June, 2005.
- Eliot Jacobson, *"Pavlov in Las Vegas,"* Blackjack Insider Newsletter #64, May, 2005.
- Eliot Jacobson, *"So What?"* Table Talk, vol. 1, #4, May, 2005, CDC Consulting.
- Eliot Jacobson, *"A Dangerous Thing,"* Blackjack Insider Newsletter #63, April, 2005.
- Eliot Jacobson, *"Betting Systems and the House Edge,"* Blackjack Insider Newsletter #62, March, 2005.
- Eliot Jacobson, *"Dealing with Variance,"* Blackjack Insider Newsletter #60, January, 2005.
- Eliot Jacobson, *"The Importance of Procedure in Table Games,"* Table Talk, vol. 1, #2, December, 2004, CDC consulting.
- Eliot Jacobson, *"Playing the Lucky Ladies Side Bet,"* Blackjack Insider Newsletter #42, July, 2003.
- Eliot Jacobson, *"Gambler's Ruin,"* Blackjack Insider Newsletter, #31, June, 2002. This article is now part of the *Best of Blackjack Insider* e-book publications.

### REVIEW OF GAMING BOOKS (professional review prior to publication by request of author):

- *"Play Blackjack Like the Pros,"* by Kevin Blackwood, ISBN 0-06-073112-5, Harper-Collins Publishing, 2005.
- *"Count Me In,"* by Al Simon, ISBN 0-7795-0051-2, self published, 2005
- *"You've Got Heat,"* by Barfarkel, ISBN 0-912177-14-4, Research Services Unlimited, 2004.
- *"Blackjack Ace Prediction,"* by David McDowell, ISBN 1-879712-1-5, Spur of the Moment Publishing, 2004.

### SAMPLE MEDIA EXPOSURE IN GAMING:

- Recurring guest on the radio show "Vegas Talk Radio," (www.vegastalkradio.com) discussing table games, January 2005 – present.
- Cast member of the television show "Beating Vegas," National Geographic Channel, Fall, 2004.
- Featured on Sunday front-page article, Santa Barbara News-Press, November 9, 2003.
- Featured on KLAS (CBS affiliate, Las Vegas), story about card counters, George Knapp reporting, summer, 2002.

### **SAMPLE RECENT COMPUTER PROGRAMS AND SIMULATIONS IN GAMING (WRITTEN IN C, C++, or JAVA):**

- Bunko Bucks
- Millenium 19
- 2<sup>nd</sup> Chance Blackjack
- Three Card Blackjack
- Iron Cross Hold'em Poker
- Tennessee Two Card Hold'em Poker
- Pai Gow Tiles
- Casino Backgammon
- Lucky Chuck 21
- Aces & Faces 21 side bet

## **MATHEMATICS**

### **PRIMARY RESEARCH AREAS IN MATHEMATICS:**

- Algebraic Number Theory
- Elementary Number Theory
- Computational Number Theory.

### **PROFESSIONAL RESEARCH PUBLICATIONS IN MATHEMATICS:**

1. Eliot Jacobson, Walter Carlip, Lawrence Somer "Pseudoprimes, perfect numbers, and a problem of Lehmer." Fibonacci Quarterly **36** (1998), pp. 361 – 371.
2. Eliot Jacobson, Walter Carlip, "A criterion for stability of two-term recurrence sequences modulo odd primes." Applications of Fibonacci numbers, Vol. 7 (Graz, 1996), pp. 49 – 60.
3. Eliot Jacobson, Walter Carlip, "Stability of two-term recurrence sequences with even parameter." Finite Fields and their Applications **3** (1997), pp. 70 – 83. Eliot Jacobson, Walter Carlip, "A criterion for stability of two-term recurrence sequences modulo  $2^k$ ." Finite Fields and their Applications **2** (1996), pp. 369 – 406.
4. Eliot Jacobson, Walter Carlip, "On the stability of certain Lucas sequences modulo  $2^k$ ." Fibonacci Quarterly **34** (1996), pp. 298 – 305.
5. Eliot Jacobson, Walter Carlip, "Unbounded stability of two-term recurrence sequences modulo  $2^k$ ." Acta Arithmetica **74** (1996), pp. 329 – 346.
6. Eliot Jacobson, Dana Carroll, Lawrence Somer, "Distribution of two-term recurrence sequences mod  $p^e$ ." Fibonacci Quarterly **32** (1994), pp. 260 – 265.
7. Eliot Jacobson, "Distribution of the Fibonacci numbers mod  $2^k$ ." Fibonacci Quarterly **30** (1992), pp. 211 – 215.
8. Eliot Jacobson, William Velez, "Fields arithmetically equivalent to a radical extension of the rationals." Journal of Number Theory **35** (1990), pp. 227 – 246.
9. Eliot Jacobson, William Velez, "The Galois group of a radical extension of the rationals." Manuscripta Mathematica **67** (1990), pp. 271 – 284.
10. Eliot Jacobson, "The distribution of residues of two-term recurrence sequences." Fibonacci Quarterly **28** (1990), pp. 227 – 229.

11. Eliot Jacobson, "A brief survey on distribution questions for second order linear recurrences." Proceedings of the First Conference of the Canadian Number Theory Association, Ed. Richard A. Molin. Published by de Gruyter (1990), pp 249 – 254.
12. Eliot Jacobson, William Velez, "Uniform and  $f$ -uniform distribution of recurrence sequences over Dedekind domains." Sichuan Daxue Xuebao, **26** (1989), pp 98 – 103.
13. Eliot Jacobson, "Almost uniform distribution of the Fibonacci Sequence." Fibonacci Quarterly **27** (1989), pp. 335 – 337.
14. Eliot Jacobson, "The permutation index of  $p$ -defect zero characters." Illinois Journal of Mathematics, **32** (1988), pp. 164 – 169.
15. Eliot Jacobson, Alan Parks, "Infinite branches of the Phi-tree." The American Mathematical Monthly, **93** (1986), pp. 552 – 554.
16. Eliot Jacobson, "The Brauer ring of a field." Illinois Journal of Mathematics, **30** (1986), pp. 479 – 510.
17. Eliot Jacobson, "The Burnside ring modulo a prime." Journal of Algebra, **99** (1986), pp. 58 – 71.
18. Eliot Jacobson, William Velez, "On the adèle rings of radical extensions of the rationals." Archiv der Mathematik, **45** (1985), pp. 12 – 20.

#### OTHER PUBLICATIONS IN MATHEMATICS:

1. "Elementary Problem FQE." Fibonacci Quarterly, **33** (1995), pg. 85.
2. "Letters on Opportunities for Undergraduate Mathematics Majors," published electronically.
3. "Elementary Problem 3089." The American Mathematical Monthly, **92** (1985), pg. 359.
4. "Advanced Problem 6489." The American Mathematical Monthly, **92** (1985), pg. 148.
5. "Advanced Problem 6383." The American Mathematical Monthly, **89** (1982), pg. 278.

#### PROFESSIONAL GRANTS AND AWARDS IN MATHEMATICS:

1. Faculty Fellowship Leave (Sabbatical), Winter 1996.
2. House-bill grant to upgrade NeXTstation, 1995. (\$2,000).
3. "Stability of two-term recurrence sequences," from the Baker Award Committee, 1995. (\$8,170).
4. House-bill grant for a new computer lab, 1992. (\$32,000).
5. "The relative permutation index of characters in finite groups," from the Ohio University Research Committee, 1985. (\$1,100).
6. "CAYLEY," from the Ohio University Regents, 1985. (\$2,000).
7. Academic Fellowship, University of Arizona, 1979 – 1980.

#### RESEARCH SEMINARS:

- Von Neuman Regular Rings, The Burnside Ring, Profinite Burnside Rings, Galois Theory of Commutative Rings, Sheaf Theory, Linear Algebraic Groups, Algebraic Geometry, Lie Algebras, Uniform Distribution, Local Representation Theory, Algebraic Number Theory.

#### COURSES TAUGHT AT OHIO UNIVERSITY:

- **Graduate:** Modern Algebra, Algebraic Number Theory, Algebraic Topology.
- **Senior Level:** Matrix Theory, Linear Algebra, Vector Analysis, Abstract Algebra, Partial Differential Equations, Number Theory, Complex Variables.
- **Junior Level:** Foundations, Geometry, Elementary Abstract Algebra, Elementary Number Theory, Differential Equations.
- **Lower Division:** College Algebra, Trigonometry, Statistics, Finite Math, Business Calculus, Calculus, Mathematics for Elementary School Teachers.