

Aaron D. Nielsen

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PROFESSIONAL SUMMARY: I am currently working as a model and simulation engineer for MacAulay Brown, specifically in the area of algorithm development. This algorithm development deals with detection and estimation applications for ELINT. Additionally, I have experience in testing and interfacing both in radar applications and in other hardware. I have completed algorithm development, implementation, and analysis both in radar and non-radar hardware.

EDUCATION:

M.S. Applied Mathematics, *University of Colorado, Denver, CO*

Concentration: Applied Probability

Cumulative GPA: 3.89/4.00

Expected Completion: May 2012

M.S. Electrical Engineering, *University of Colorado, Boulder, CO*

Concentration: Digital Signal Processing and Digital Communications

Cumulative GPA: 3.53/4.00

Completed: December 2008

B.S. Electrical Engineering, *Colorado State University, Fort Collins, CO*

Cumulative GPA: 3.55/4.00

Major GPA: 3.50/4.00

Completed: May 2007

B.S. Mathematics, *Colorado State University, Fort Collins, CO*

Major GPA: 3.89/ 4.00

Completed: May 2007

COMPUTER SKILLS:

Operating Systems:	• Windows (all)	• Linux/Unix	• DOS
Programming Languages:	• C	• Perl	• HTML
Software Programs:	• Matlab	• MathCAD	• Spice
	• R/S-Plus	• Microsoft Office	• Adobe Photoshop

RELEVANT COURSE WORK:

• Mathematical Probability	• Stochastic Processes	• Probabilistic Modeling
• Mathematical Statistics	• Statistical Computing	• Applied Analysis
• Digital Communications	• Analog Communications	• Wireless Communications
• Digital Signal Processing	• Information Theory	• Cryptography

WORK EXPERIENCE:

Engineer III, MacAulay-Brown, Inc.

Supervisor: Rich Hull | Phone: (303) 751-2671

Aurora, CO

May 2009 –

- Model and simulation engineer specializing in detection and estimation algorithms for ELINT applications
- Implement a specific radar data read/write function in C++
- Research, implement, and perform trade studies on adaptive beamforming algorithms including linearly-constrained minimum variance, minimum mean squared error, and classical beamforming
- Develop a method of optimizing multiple variables for a constant false alarm rate coherent detector
- Modify an existing pulse repetition interval deinterleaving algorithm to address shortfalls in performance and computational complexity
- System engineering analysis and support for current airborne sensors

Electrical Engineering Intern, Institute for Telecommunication Sciences
Supervisor: Dr. Robert Stafford | Phone: (303) 489-7835

Boulder, CO
May 2007 – August 2007

- Collect and interpret data from RSA3408A, Spectrum Analyzer
- Resolve Matlab collection program errors
- Process data in Matlab in time and frequency domains
- Design Matlab GUI to display processed data

Student Intern, UV-B Research Program
Supervisor: Dr. Jim Slusser | Phone: (970) 491-3623

Fort Collins, CO
May 2006 – August 2006

- Test MFRSR units using direct sunlight and artificial light sources
- Troubleshoot malfunctioning interference filter photodiode circuits
- Research future implementations of MFRSR circuit
- Implement circuit designs in ExpressPCB

RESEARCH EXPERIENCE:

Master's Student, University of Colorado at Denver
Supervisor: Dr. Burt Simon | Phone: (303) 556-8444

Denver, CO
August 2010 –

- Analyze previous research involving the modeling of Evolutionary Dynamics using birth-death processes
- Optimize previous single group birth-death process simulation for speed
- Develop a multiple group birth-death process simulation modeling Evolutionary Dynamics
- Assist in development of publication of results

Graduate Research Assistant, University of Colorado at Boulder
Supervisor: Dr. Mahesh Varanasi | Phone: (303) 492-0258

Boulder, CO
August 2007 – June 2008

- Read, analyze, and critique current research dealing with the use of Algebraic Number Theory in MIMO Communication Systems
- Investigate applicability of research to future communication systems
- Propose and initiate future research on the subject

CLEARANCES:

- Top Secret SCI
- CI (Counterintelligence) Polygraph, April 2011
- FS (Full Scope) Polygraph, November 2011

HONORS/ACTIVITIES:

- Ph.D. GAANN Fellowship 2007 – 2008
- IEEE Student Membership 2004 – 2007
- Tau Beta Pi, Engineering Honor Society 2004 – 2007
- Eta Kappa Nu, Electrical Engineering Honor Society 2004 – 2007
- Circuit Theory Teaching Assistant Spring 2007
- Electrical Engineering Tutor Fall 2005
- Chemistry 1 & 2 Tutor Spring 2004
- Claude W. Wood Scholarship 2002 – 2006
- Colorado Distinguished Scholar 2002 – 2006
- High School Class Valedictorian May 2002
- *Multimedia Mania*, 1st place high school division June 1999
- *Multimedia Mania*, 1st place middle school division June 1998