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CASEY A. ANDERSON

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Executive Summary

Nuclear engineer, physicist, and programmer with over six years of experience involving scientific computing, critical thinking, and analytical problem solving. Leader in student organizations, strong collaborator in diverse work environments, demonstrated history meeting deliverables and communicating results.

"Put in a quote right here from someone, and its okay if it goes over a few lines thats okay"

Quote Person

Professional Experience

Los Alamos National Laboratory

Los Alamos, New Mexico

Graduate Research Assistant	<i>NEN-5, Systems Design & Analysis</i> ¹	May 2016 - Present
Graduate Research Assistant	<i>ISR-1, Space Science & Applications</i> ²	Dec. 2016 - Present
Post Master's Research Assistant	<i>W-13, Advanced Engineering Analysis</i> ³	May 2011 - Jul. 2012
Summer Intern	<i>XCP-3, Monte Carlo Codes</i> ⁴	2010

- Implemented new features in MCNP6 through writing code, developing benchmarks, publishing reports, and presenting the new features at various conferences [Pubs: [1,2,4,5,6](#)]¹
- Gained significant knowledge and experience in the design, modeling, simulation, and analysis of a variety of radiation detectors for the **Nuclear Detection Figure of Merit (NDFOM)** project²
- Transitioned NDFOM from version 2.0 to 3.0 by modularizing and refactoring the backend Python code and through developing a cleaner, more intuitive HTML user interface for the customer²
- Managed the deployed server of NDFOM, including SQL database²
- Assisted in the development, testing, validation, and verification of the combined radiation transport and finite-element analysis multi-physics capability for the **Engineering Campaign-7 Nuclear Survivability** project³
- Developed unstructured mesh human phantoms for health physics applications with MCNP6 [Pub: [10](#)]³
- Acquired DOE Q-level security clearance and Sigmas 1-10,11,12,13,15 and performed analysis on the W-88 system³
- Utilized the high performance computing (HPC) systems and utilities for advanced physics simulations and analysis^{1,2,3,4}
- Created a software visualization package for finite element geometries in MCNP simulations⁴

Medical College of Wisconsin

Milwaukee, Wisconsin

Graduate Research Assistant	<i>Department of Biophysics</i>	2012-2016 ¹
Biophysics Representative, IT Liason	<i>Graduate Student Council</i>	2014-2016 ²

- Funded my graduate studies through conducting the background research, providing the preliminary results, and co-authoring a successful [R21](#) National Institute of Health (NIH) grant¹
- Patented a segmented reconstruction technique for artifact reduction in Magnetic Resonance Imaging [Pat: [i](#).]¹
- Collaborated with a diverse group of professionals, including medical doctors and imaging technologists, to perform clinical research, meet deliverables, and submit the findings to various international conferences [Pubs: [7,8,9](#)]¹
- Interacted with clinical patients and subjects to collect patient data for clinical studies
- Facilitated communication between students and staff in the graduate school with the university's Information Technology group²

University of Wisconsin - Madison

Madison, Wisconsin

Student Research Assistant	<i>Department of Medical Physics</i>	2008-2011
Chapter President	<i>American Nuclear Society (ANS)</i>	2010-2011

- Researched methods for non-invasive quality assurance assessment of radioactive brachytherapy seeds
- Managed the American Nuclear Society organizational duties, including activities such as recruiting guest speakers to present at meetings, organizing conference travel, and arranging public outreach events
- Mentored and taught a variety of students through volunteering at various events, such as Science Olympiad, middle and high school science fairs, and teaching local Boy Scout chapters to achieve their merit badges

Areas of Expertise

Physics/Engineering

- Nuclear Engineering
- Fourier Analysis
- Monte Carlo Methods
- Magnetic Resonance Imaging
- High Performance Computing
- Signal Processing
- Regularization Methods
- Radiation Detectors
- Multi-physics coupling
- Radioactive Material Handling
- Computer Aided Engineering
- Finite Element Analysis

Software

- MCNP
- Abaqus/CAE
- Linux
- Matplotlib
- Microsoft Office
- Matlab
- MacOS
- PostgreSQL
- Windows
- VisIt
- RELAP

Programming

- Python
- Bash
- L^AT_EX
- Unit Testing
- Matlab
- Mercurial
- Git
- C/C++
- Fortran
- Debugging
- Java

Other Skills

- Technical Writing
- Presentations
- Leadership
- Version Control
- File I/O
- Scripting
- Data Visualization
- Validation & Verification
- SQL Databases
- Clinical Work
- Server Management
- Animal Handling

Key (Skill Level)

- Expert ○ Intermediate ○ Beginner

Funding Sources

General Electric / National Football League concussion study grant	MCW
Department of Homeland Security (DHS) / Department of Nuclear Detection Office (DNDO)	NEN-5
Department of Homeland Security (DHS) / Nuclear Detection Figure-of-Merit (NDFOM)	ISR-1
Engineering Campaign 7, Nuclear Survivability	W-13

Awards & Honors

SPOT Award	Los Alamos National Laboratory	August, 2017
Magna Cum Laude	ISMRM Proceeding	May, 2016
Silver Medal: Student Poster	ISMRM Conference	2014
Exelon Scholarship	University of Wisconsin - Madison	2009, 2010

Affiliations

American Nuclear Society (ANS)	2008-2012, 2016-Present
American Association of Physicists in Medicine (AAPM)	2009-2011, 2013-2016
International Society of Magnetic Resonance in Medicine (ISMRM)	2012-2016

Education

Primary Education

M. Sc, Biophysics	Medical College of Wisconsin	April, 2016
M. Sc, Nuclear Engineering & Engineering Physics	University of Wisconsin - Madison	May, 2011
B. Sc, Nuclear Engineering	University of Wisconsin - Madison	May, 2011

Thesis: "Quantitative Susceptibility Mapping: Exploratory Development and Initiation of Processing Pipelines"

Additional Classes & Trainings

MCNP6 Intermediate Workshop	Los Alamos New Mexico	May, 2016
CPR Certification Training	Milwaukee, Wisconsin	May, 2015
General Electric MR Programming Workshop	Madison, Wisconsin	Oct, 2014
Dale Carnegie Training	Los Alamos, New Mexico	August, 2011
Introduction to Abaqus	Minneapolis, Minnesota	June, 2011
Introduction to Python Programming	Los Alamos, New Mexico	July, 2010
MCNP5 Beginner Workshop	Los Alamos, New Mexico	May, 2010

References

A list of professional, academic, and personal references can be at [here](#)

Publications & Presentations

1. Casey Anderson and Gregg McKinney. "MCNP6 Built-in High Level Detector Responses". In: *2017 IEEE Nuclear Science Symposium and Medical Imaging Conference*. (Atlanta, Georgia). Oct. 2017,
2. ‡ Casey Anderson et al. "Neutron and Gamma Correlations using CGM in MCNP 6.2.0 (LA-UR-20353)". In: *Proceedings of the 27th American Nuclear Society Summer Meeting*. (San Fransisco, California). 2017, [Link](#)
3. § James Tutt and Gregg McKinney. "Speed and Memory Improvements to MCNP6 Delayed-Gamma Line Treatment (LA-UR-21050)". In: *Proceedings of the 27th American Nuclear Society Summer Meeting*. (San Fransisco, California). 2017
4. ‡ Casey Anderson et al. "Delta-ray production in MCNP6.2.0 (LA-UR-16-25402)". In: *24th Conference on Applications of Accelerators in Research and Industry*. (Forth Worth, Texas). Nov. 2016, [Link](#)
5. ‡ James Tutt, Casey Anderson, and Gregg McKinney. "Background-Source Cosmic-Photon Elevation Scaling and Cosmic-Neutron/Photon Date Scaling in MCNP6 (LA-UR-16-24928)". In: *24th Conference on Applications of Accelerators in Research and Industry*. (Forth Worth, Texas). Nov. 2016, [Link](#)
6. James Tutt, Casey Anderson, and Gregg McKinney. "Delayed-Gamma Energy Biasing with Exact Energy Sampling in MCNP6.2.0 (LA-UR-16-24057)". In: *Proceedings of the 26th American Nuclear Society Winter Meeting*. (Las Vegas, Nevada). Oct. 2016, [Link](#)
7. || Casey Anderson et al. "Volume-Paracellated Quantitative Susceptibility Mapping". In: *Proceedings of the International Society of Magnetic Resonance in Medicine 24th Conference*. (Singapore, Singapore). May 2016, [Link](#)
8. † Casey Anderson and Kevin Koch. "Volume-parcellated Quantitative Susceptibility Mapping of the Human Brain at 7T". in: *2015 Minnesota Workshop on High and Ultra-High Field Imaging*. (Minneapolis, Minnesota). Oct. 2015, [Link](#)
9. Casey Anderson, Kimberley Pechman, and Kathleen Schmainda. "Quantitative Susceptibility Mapping to Assess Iron Levels in Rat Brain Tumors". In: *Proceedings of the International Society of Magnetic Resonance in Medicine 22nd Conference*. (Milan, Italy). May 2014, [Link](#)
10. ‡ Casey Anderson, Tim Goorley, and Karen Kelley. "Mesh Human Phantoms with MCNP (LA-UR-12-01307)". In: *2012 3DS Simulia Community Conferece Proceedings*. (Providence, Rhode Island). May 2012, pp. 556-568, [Link](#)

‡Presentation Included; §Presentation Only; ||*Magna Cum Laude*

Patents

- i. Kevin Koch and Casey Anderson. *System and method for localized processing of quantitative susceptibility maps in magnetic resonance imaging*. WO Patent App. PCT/US2016/038,723. Dec. 2016. URL: <https://www.google.com/patents/WO2016209930A1?c1=en>, [Link](#)