Joseph Curtis
Nuclear Engineer
Radiation Detection ✚ Data Analysis ✚ Modeling & Simulation

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education

2012–2014 (Fall)	**Master of Science** Nuclear Engineering (GPA 3.84)	University of California, Berkeley

Thesis: "Benchmarking the Gamma Ray Sensors on RadMAP"
- Outstanding Graduate Student Instructor Award
- Alpha Nu Sigma Membership (Nuclear Engineering Honor Society)

2007–2011	**Bachelor of Science** Nuclear Engineering (GPA 3.86)	University of California, Berkeley

Honors Thesis: "Measurements and Analysis of Fukushima Fallout by BRAWM"
- Department Citation (Top GPA in graduating class)
- Tau Beta Pi Membership (Engineering Honor Society)

relevant experience

Jan '15 – Present   **Associate Specialist**   Lawrence Berkeley National Laboratory/UC Berkeley

Radiological Multi-sensor Analysis Platform (RadMAP)
- Upgraded gamma-ray detector acquisition hardware and software on board a mobile platform
- Utilized Python to develop a real-time analysis platform to process radiological (gamma-ray) and contextual (video and GPS) sensor data
- Produced fused data products for field operations and anomalous source detection scenarios
- Presented project progress and results at sponsor review meeting

DoseNet
- Project Co-Lead of a distributed radiation sensor network for educational purposes
- Managed the technical development of sensor hardware, the database back-end and the web visualization front-end
- Coordinated with local schools to mount sensors and build related educational modules

Aug '12 – Dec '14   **Graduate Student Researcher**   Lawrence Berkeley National Laboratory/UC Berkeley

Radiological Multi-sensor Analysis Platform (RadMAP)
- Constructed detailed system models in MCNP and Geant4 for ray-tracing and Monte-Carlo gamma-ray simulations on high-performance computing clusters
- Conducted field experiments to validate simulation results
- Processed large data sets to produce visualizations for reports and communicated results

Aug '11 – Aug '12   **Junior Specialist**   Dept of Nuclear Engineering, UC Berkeley

Advanced Concepts in Radiation Detection (NE204)
- Maintained experiments in a graduate radiation detection laboratory course
- Developed signal processing and gamma-ray imaging tools in MATLAB
- Taught students methods to operate digital acquisition systems

relevant skills

Radiation Detection   Five years of hands-on experience with radiation detectors ranging from high-purity germanium gamma-ray spectroscopy to gamma/neutron pulse discrimination with liquid scintillators

Digital Acquisition Systems   Proficiency with modern digital acquisition hardware and software for gamma ray detectors

Scientific Workflows   Extensive experience with independent and cooperative data analysis using Python and Github as well as data storage techniques (HDF5), scientific visualizations (Matplotlib and Mayavi) and familiarity with machine learning techniques (Scikit-Learn)

Modeling and Simulation   Working knowledge of Monte-Carlo simulation techniques for gamma-ray physics using MCNP and Geant4 on high-performance parallel processing computing resources

Real-time Sensor Integration   Detailed understanding of processing and fusing multi-sensor data for analysis with detection algorithms and producing high quality data products