Curriculum Vitae

Andrea Alfonsi

RAVEN software

PERSONAL INFORMATION

Name:	*Andrea Alfonsi*
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Nationality:	*Italian, USA Permanent Resident (Green card holder)*

PROFESSIONAL EXPERIENCE

- *June 2023 to present*

NuCube Energy, INC,*(Pasadena, California, USA – Idaho Falls, Idaho, USA)*

Job Title: Core Design Methods Manager

Job Responsibilities:

- *Responsible for the methods identification, development and deployment for NuCube Energy reactor design (Core)*
- *Responsible of the core design activities for NuCube Energy microreactor*
- *Responsible of the balance of plan design and oversight for NuCube Energy microreactor*

- *June 2021 to June 2023*

Ultra-Safe Nuclear Corporation (USNC-Tech),*(Seattle, Washington, USA – Idaho Falls, Idaho, USA)*

Job Title: *Nuclear Analysis and Design Functional Manager*

Job Responsibilities:

- *Functional Manager (Team composed by 10+ nuclear engineers) of the nuclear team*
- *Product Owner of the RAPTOR software (USNC-Tech multi-physics framework)*
- *Responsible for the Safety Analysis and Source Term for the Pylon reactor (Lunar and Mars surface nuclear reactor)*
- *Responsible for the Safety Analysis and Neutronic Nodal Kinetic of the Nuclear Thermal Propulsion USNC-Tech system*

- *November 2010 to June 2021*

Idaho National Laboratory,*(Idaho Falls, Idaho, USA)*

Job Title: Modeling and Simulation scientist

Job Responsibilities:

- *Technical Leader (Team composed by several developers) and Lead developer of the Risk Analysis and Virtual Environment code – RAVEN framework (https://raven.inl.gov) (2014-2021)*
- *Technical Leader and Lead developer of the Reactor Physics Code Parallel and Highly Innovative Simulation for INL Code System (PHISICS) (2014-2021)*
- *Project and Work Package manager of the "PWR Reload Licensing Process Optimization", under the Risk Informed System Analysis pathway (LWRS) (2018-2021)*
- *Resource team of NAMAC awarded ARPA-E (IRP) (2020-2021)*
- *PI of a Technology Commercialization Fund grant with FPoliSolutions Inc, for the commercial deployment of the RAVEN software (2018-2020)*
- *PI of a Technology Commercialization Fund grant with Framatome, for the commercial deployment of the PHISICS software (2018-2020)*
- *INL PI of the NEUP "Integrating Static PRA Information with RISMC Simulation Methods", led by Ohio State University (2018-2021)*
- *INL Fuel Cycle group, as expert of the MRTAU depletion software (2010-2016)*
- *NGNP INL Group, as Reactor Physics and software consultant for the Phase I and II of the OECD/NEA MHTGR-350 MW Benchmark (2012-2018)*
- *Neutron Cross Sections' adjustment project as modeling and simulation expert (2010-2011)*
- *Japan Atomic Energy Agency for HTR modeling with PHISICS/RELAP5-3D (2015-2016)*
- *Mentor of more than 14 students/interns (MSc. and PhD)*

- *February 2010 to July 2010*

Nuclear Measurement Laboratory of Energy and Nuclear Engineering Department – University La Sapienza,*(Rome, Italy)*

Job Title: Laboratory Assistant.

Activities: Post-graduate collaboration with Prof. Romolo Remetti:

- *Experimental activities, using calibrated gamma sources, in order to assess the full energy peak efficiency (FEPE) of several HPGe detectors;*
- *Gamma spectrometry waste characterization of nuclear wastes via experimental activities and data interpretation using the CANBERRA code Genie2000.*

- *August 2009 to January 2010*

ENEA Research Center "Casaccia" at NUCLECO S.p.A., *(Rome, Italy)*

Job Title: Intern

Activities: Cross validation of experimental data and Monte Carlo simulation (MCNP), to assess the detection efficiency of several gamma spectrometry set ups, using HPGe detectors and spectrum acquisition software, such as Genie2000, ISOCS and LabSOCS.

- *September 2007 to December 2007*

Department of Mechanical and Aerospace engineering at University La Sapienza *(Rome, Italy)*

Job Title: Intern

Activities:
- *Theoretical studies about the available fuel cell technologies;*
- *Experimental activities using PEMFC (Proton exchange membrane fuel cell), AFC (Alkaline fuel cell), DMFC (Direct methanol fuel cell), in order to evaluate the operational limits.*

EDUCATION

- *November 2012 to February 2016:*

Doctor of Philosophy (PhD) in Energy Engineering (Nuclear engineering) at the University La Sapienza *(Rome, Italy)*

Thesis title: Advanced Methods for Safety Analysis and Probabilistic Risk Assessment applied to Thermo-Hydraulic and Multi-Physics codes.

- *January 2010:*

Master of Science in Energy Engineering (Nuclear engineering) at the University La Sapienza *(Rome, Italy)*

Grade: 110/110 cum laude (GPA 4.0/4.0)

Thesis title: Validation of a calculation code system dedicated to in-laboratory gamma spectrometry, using Monte Carlo Calculations and experiments.

- *December 2007:*

Bachelor of Science in Energy Engineering at the University La Sapienza *(Rome, Italy)*

Grade: 105/110 (GPA 3.81/4.0)

Thesis title: Energy recovery from biogas using molten carbonate fuel cells.

- *July 2004:*

Scientific High School Diploma at the Liceo Scientifico G. Peano (Nereto, Italy)

AWARDS, LICENSES AND MEMBERSHIPS

Teaching Habilitation:

- *Abilitazione Scientifica Nazionale (University Teaching Abilitation) – II Fascia, Settore Concorsuale 09/C2 (Domanda 55283)*

Licenses and Copyrights:

- *Copyright and Open-sourcing (2021) – FARM Feasible Actuator Range Modifier*
- *Copyright and Open-sourcing (2020) – TEAL economic analysis framework*
- *Copyright and Open-sourcing (2019) – HYBRID modeling and simulation framework*
- *Licensing and Copyright (2014) - PRA, UQ and Risk Management code RAVEN*
- *Licensing and Copyright (2012) - Reactor Physics code PHISICS (Parallel and Highly Innovative System for INL Code System)*

Awards:

- *2023 R&D 100 for RAVEN software (link)*
- *INL instant recognition award for the support in the successful interaction with the Institute of Nuclear Safety System,Inc, 2019*
- *Nuclear Science and Technology Recognition award, 2017*
- *INL instant recognition award for exceptional work on RAVEN Ensemble Modeling, 2016*
- *Certificate of Appreciation – employee special recognition award from Associate Lab Director, Nuclear S&T, 2013*
- *INL instant recognition award for exceptional work on RAVEN code, 2013*
- *INL patent award for the licensing and copyright of the reactor physics code PHISICS, 2012*
- *INL golden medal for outstanding personal work performance, 2011*
- *INL instant recognition award for exceptional work on PHISICS, 2011*

Memberships:

- *Member of the American Nuclear Society (ANS) since 2012*
- *Member of the Italian Nuclear Society (ANI) from 2013 to 2018*
- *Member of Italian Licensed Engineers since 2010*
- *Member of the technical program committee of the ANS Reactor Physics division (2015-2018) (2018-2021)*

PUBLICATIONS

More than 120 publications:

- *25+ articles in peer-reviewed journals,*
- *65+ papers in proceedings of international conferences*
- *40+ publicly available reports*

Available at:

- *ORCID: ORCID link*
- *SCOPUS:SCOPUS link*
- *Google Scholar: Google Scholar link*
- *Research Gate: Research Gate link*

Scientific Metrics (Jan 2025):

Resource	h-index	Citations
SCOPUS	*17*	*749*
GOOGLE SCHOLAR	*25*	*1978*