

Vincent Philip Paglioni

Curriculum Vitae

Current as of: June 2023

Affiliation: Department of Systems Engineering
Colorado State University

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1 Education

- Ph.D., Reliability Engineering **University of Maryland, College Park** 2023
Advisor: Dr. Katrina Groth
Dissertation Title: *Improving the Foundational Knowledge of Dependency in Human Reliability Analysis*
- M.S., Reliability Engineering **University of Maryland, College Park** 2022
GPA: 3.96/4.00
Advisor: Dr. Katrina Groth
- B.S., Nuclear & Radiological Engineering **Georgia Institute of Technology** 2017
GPA: 3.49/4.00
Minor: Mathematics

2 Research and Professional Experience

2.1 Appointments

- **Assistant Professor** *Department of Systems Engineering* 07/2023 – present
Colorado State University
Fort Collins, CO
- **Faculty Assistant** Reliability Engineering 06/2023 – 06/2023
- **Graduate Research Assistant** *System Risk and Reliability Analysis (SyRRA) Lab* 08/2019 – 05/2023
Advisor: Katrina M. Groth
Center for Risk and Reliability
University of Maryland
College Park, MD, USA
 - Identified three critical aspects dependency that must be conveyed in a robust definition.
 - Created a standard definition for “dependency” and related concepts in the HRA context.
 - Created a taxonomy of six dependency relationships and developed their graphical representation using Bayesian networks (BNs).
 - Developed the methodologies to build and quantify HRA BNs using the idioms and HRA data.
- **Nuclear Test Engineer** *Primary Systems Test Engineering (2340.2)* 06/2017 – 07/2019
Supervisor: Patrick Cruise
Portsmouth Naval Shipyard
Kittery, ME, USA
 - Reviewed, wrote, and implemented maintenance and testing procedures for primary fluid systems and components under multiple submarine projects. Worked with Project Management and Technicians to resolve engineering and performance issues with procedures.
 - Taught the fundamentals of nuclear and electrical engineering to new engineering hires.
- **UG Research Assistant** *Fusion Research Center* 2016
Advisor: Weston Stacey
Georgia Institute of Technology
Atlanta, GA, USA

- **Nuclear Fuel Analysis Intern** *Pressurized Water Reactor Analysis Group* 2015
 Supervisor: Jennifer Baker Southern Nuclear Operating Company
 Birmingham, AL, USA
- Investigated past occurrences of CRUD-induced Power Shift (CIPS) in PWRs and determined the effects of planned reactor condition changes on CRUD accumulation onto core structures.

2.2 Conference Leadership

- **Student Programs Chair, 18th International Probabilistic Safety Assessment & Analysis Conference (PSA 2023)**, Knoxville, Tennessee. July 15 – 20, 2023.
 - Organized the [Student Research Lightning Round](#) competition for students to present their research in under three minutes using a single, static slide.

3 Teaching Experience

- **Teaching Assistant** *ENRE 602: Principles of Reliability Analysis* Fall '20, '21, '22
 University of Maryland Instructor: Katrina M. Groth
 - **Responsibilities:** Small-group learning sessions, creating and grading assignments, presenting lecture material. Created one lecture covering my research area at the graduate level.
 - Taught roughly 75 students total over 3 semesters.
- **Teaching Assistant** *ENRE 447: Fundamentals of Reliability Engineering* Spring 2021
 University of Maryland Instructor: Katrina M. Groth
 - **Responsibilities:** Small-group learning sessions, creating and grading assignments.
 - Taught 7 students in 1 semester.
- **Course Co-Instructor** *Fundamentals of Nuclear & Electrical Engineering* 2019 – 2020
 Portsmouth Naval Shipyard
 - **Responsibilities:** Created and presented lecture materials to a diverse group of new engineers in rolling classes throughout the year.

4 Sponsored Research

4.1 Active

- **U.S. Nuclear Regulatory Commission (NRC)** *Improving foundational knowledge of dependency in Human Reliability Analysis* 09/25/2020 – 09/24/2023
 PI: Katrina M. Groth Role: Co-preparer, Researcher
 - \$500,000 award from U.S. NRC through Grant number 31310020M0002.
 - Co-wrote the grant application that covers my current dissertation research, with the goal of developing a coherent understanding of dependency in HRA from conceptualization to quantification.
 - Refined the standard terminology for HRA dependency, created dependency idioms to describe fundamental relationships in HRA, and developed BN representation of the idioms.
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4.2 Completed

- **U.S. Nuclear Regulatory Commission (NRC)** *Faculty Development for Cross-Disciplinary Research in Probabilistic Risk Assessment for Nuclear Facilities* 07/16/2018 – 07/15/2021
 PI: Katrina M. Groth Role: Researcher
- Created standard terminology for HRA dependency that improves the traceability and objectivity of HRA assessments. This work formed the basis for my dissertation research.

5 Publications

5.1 Refereed Journal Articles

- [J1] **Vincent P. Paglioni** and Katrina M. Groth, [Dependency definitions for quantitative human reliability analysis](#), *Reliability Engineering & System Safety*, 220, 2022.

5.2 In-review Papers and Current Projects

- [W3] **Vincent P. Paglioni** and Katrina M. Groth, “Dependency Idioms for Quantitative Human Reliability Analysis,” under review for *Nuclear Science & Engineering*, 2022.
- [W2] Camille S. Levine, Ahmad Al-Douri, **Vincent P. Paglioni**, and Katrina M. Groth, “Identifying human failure events for human reliability analysis: a review of gaps and research opportunities.”
- [W1] **Vincent P. Paglioni** and Katrina M. Groth, “Developing Bayesian Networks from HRA Data.”

5.3 Refereed Conference Papers

- [C4] **Vincent P. Paglioni**, Torrey Mortenson, and Katrina M. Groth, [The human failure event: what is it and what should it be?](#) In *Proceedings of the 16th Probabilistic Safety Assessment and Management Conference (PSAM16)*, Honolulu, 2022.
- [C3] Andres Ruiz-Tagle, **Vincent P. Paglioni**, Enrique Lopez-Droguett, and Katrina M. Groth, [A Framework to Extrapolate and Evaluate Human Reliability Causal Models from Event Report Narratives](#), in *2021 International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2021)*, Columbus, 2021.
- [C2] **Vincent P. Paglioni** and Katrina M. Groth, [Defining Dependency in HRA](#), in *2021 International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2021)*, Columbus, 2021.
- [C1] **Vincent P. Paglioni** and Katrina M. Groth, [Unified Definitions for Dependency in Quantitative Human Reliability Analysis](#), in *Proceedings of the 30th European Safety and Reliability Conference and the 15th Probabilistic Safety Assessment and Management Conference*, 2020.

5.4 Conference, Workshop, and Invited Presentations

- [P4] **Vincent P. Paglioni**, Camille S. Levine, and Katrina M. Groth, UMD Systems Risk and Reliability Analysis (SyRRA) Lab: HRA Research - Improving the Foundational Knowledge of Dependency in HRA, Presented to Sandia National Laboratory (invited), Albuquerque NM, March 23, 2022.
- [P3] Katrina M. Groth and **Vincent P. Paglioni**, Using Bayesian Networks in Human Reliability Analysis, Presented to Sandia National Laboratory (invited), Virtual, November 5, 2021.
- [P2] **Vincent P. Paglioni** and Katrina M. Groth, Temporal Behaviors of Dependency Relationships in Human Reliability Analysis, Presented at the Annual Meeting of the Society for Risk Analysis, Virtual, Dec. 2020.
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[P1] **Vincent P. Paglioni** and Katrina M. Groth, Can HRA Data Address HFE Dependency?, Presented at the NRC HRA Data Workshop, Virtual, Mar. 2020.

5.5 Non-Technical Articles

[P1] **Vincent Paglioni**, [The Ethics of Intelligent Machines](#), *Investments & Wealth Monitor*, 50–52, Nov. 2015.

6 Awards

- University of Maryland Future Faculty Program 2022 – *present*
- Northrop Grumman Foundation Graduate Fellowship 2022
- Honorable Mention, Student Paper on Safety Innovation Challenge Contest (ASME Safety Engineering, Risk and Reliability Analysis Division (SERAD)) 2021
- Robert E. Uhrig Graduate Scholarship (American Nuclear Society Human Factors, Instrumentation & Controls Division (HFICD)) 2021
- Clark Doctoral Fellowship (A. James & Alice B. Clark Foundation, UMD) 2019 – *present*
- First Place, Nuclear & Radiological Engineering Capstone Exposition (Georgia Tech) 2017
- Zell Miller Scholarship (Georgia Student Finance Commission) 2012 – 2016

7 Professional Societies

- **American Society of Mechanical Engineers (ASME)** 2020 – *present*
Nuclear Engineering Division (NED)
Safety Engineering & Risk Analysis Division (SERAD)
- **Society for Risk Analysis (SRA)** 2020 – *present*
Decision Analysis & Risk Group
Foundational Issues in Risk Analysis Group
- **American Nuclear Society (ANS)** 2016 – *present*
Human Factors, Instrumentation & Controls Division (HFICD)
Nuclear Installations Safety Division (NISD)
Young Members Group (YMG)
- **North American Young Generation in Nuclear (NAYGN)** 2016 – *present*

8 Service Activities

8.1 Reviewing Activities

- Fire Safety Journal 2022 – *present*
 - Nuclear Science and Engineering 2022 – *present*
 - Nuclear Engineering and Technology 2021 – *present*
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8.2 Mentoring Activities

- **Samantha Wismer**, Ph.D. Student in Reliability Engineering 2022 – *present*
 Projects: *Improving the foundational knowledge of dependency in HRA;*
PRA Exhibit collaboration with National Museum of Nuclear Science & History
- **Siddharth Karunakaran**, B.S. Student in Mechanical Engineering Spring 2022
 Project: Curating figures for reliability engineering textbook.
- **Temitope Williams**, B.S. Student in Mechanical Engineering Spring 2022
 Project: Curating figures for reliability engineering textbook.
- **Camille S. Levine**, Ph.D. Student in Reliability Engineering 2021 – *present*
 Projects: *Improving the foundational knowledge of dependency in HRA;*
PRA Exhibit collaboration with National Museum of Nuclear Science & History;

8.3 Campus Service and Activities

- *Reactor Operator*, Maryland University Training Reactor 2022
- *Mentor*, Clark Doctoral Fellows Program 2022 – *present*
- *Program Representative*, Graduate Student Government 2021 – 2022
- *Member*, Roush Fellowship Selection Committee 2020 – 2022

8.4 Broader Service

- *Student Programs Chair*, 18th International Probabilistic Safety Assessment & Analysis Conference (PSA 2023) July 2023
 - *Associate Member*, ANS-3.13 Reliability Assurance Program (RAP) Standard Committee 2022 – *present*
 - *Delegate*, Washington Nuclear Engineering Student Delegation September 2022
 - *Technical Reviewer*, Journal of Emerging Investigators 2019 – *present*
 - *Coach*, Dover (NH) Middle School FIRST LEGO Robotics Team “Ride the Robot” 2018 – 2019
 - *Member*, Portsmouth Naval Shipyard STEM Outreach Committee 2018 – 2019
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