Vincent Philip Paglioni
Curriculum Vitae

Current as of: August 2023

Affiliation: Department of Systems Engineering
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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**   *Improving foundational knowledge of dependency in*   09/25/2020 –
  Commission (NRC)   *Human Reliability Analysis*   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.

4.2   Completed

- **U.S. Nuclear Regulatory**   *Faculty Development for Cross-Disciplinary Research in*   07/16/2018 –
  Commission (NRC)   *Probabilistic Risk Assessment for Nuclear Facilities*   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.

[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   2021
  Safety Engineering, Risk and Reliability Analysis Division (SERAD))
- Robert E. Uhrig Graduate Scholarship (American Nuclear Society Human Factors,   2021
  Instrumentation & Controls Division (HFICD))
- 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*

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