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Engineering & Scientific Consulting

Chloe Applegate, Ph.D.

Senior Associate | Civil and Structural Engineering
Oakland
+1-510-268-5020 | capplegate@exponent.com

Professional Profile

Dr. Applegate specializes in multi-hazard risk assessment of complex, interdependent critical infrastructure networks. She has worked with multiple private and public clients, including the federal government, to develop risk analysis frameworks for natural hazards and intelligent adversary risks across energy, water, and communications infrastructure.

Dr. Applegate has also developed methods to identify critical nodes in multi-infrastructure network models and prioritize investments given the vulnerability and potential consequences of different outage scenarios.

Prior to joining Exponent, Chloe was a Systems Analyst and Deputy Associate Program Leader at Lawrence Livermore National Laboratory. There, she leveraged a background in researching critical infrastructure interdependencies to develop tools and frameworks to support all hazards risk assessment, interdependency analysis, and cybersecurity recommendation development for sponsors within the Department of Homeland Security and Department of Energy. She oversaw a portfolio of systems analysis projects on developing quantitative risk frameworks to analyze intelligent adversary attacks and analyzing cascading consequences between interdependent critical infrastructure systems.

Academic Credentials & Professional Honors

M.S., Civil Engineering, Georgia Institute of Technology, 2018

Ph.D., Civil Engineering, Georgia Institute of Technology, 2018

B.S., Civil Engineering, University of Florida, 2014

Prior Experience

Deputy Associate Program Leader for Infrastructure Systems Analysis, Lawrence Livermore National Laboratory, 2020-2022

Systems Analyst, Lawrence Livermore National Laboratory, 2018-2022

Graduate Research Assistant, Georgia Institute of Technology, 2014-2018

Publications

Can Huang, Chih-Che Sun, Yuming Jiang, Chloe Applegate, Peter Barnes, and Emma Stewart (2021). Smart Meter Pinging and Reading Through AMI Two-Way Communication Networks to Monitor Grid Edge

Devices and DERs. IEEE Transactions on Smart Grid, DOI: 10.1109/TSG.2021.3133952.

Chloe Johansen Applegate and Iris Tien (2019). Framework for Probabilistic Vulnerability Analysis of Interdependent Infrastructure Systems. ASCE Journal of Computing in Civil Engineering, 33(1).

Chloe Johansen and Iris Tien (2018). Probabilistic multi-scale modeling of interdependencies between critical infrastructure systems for resilience. Sustainable and Resilient Infrastructure, 3(1), pp. 1-15.

Chloe Johansen, Jennifer Horney, and Iris Tien (2017). Metrics for Evaluating and Improving Community Resilience. American Society of Civil Engineers Journal of Infrastructure Systems, 23(2).

Research Grants

National Science Foundation Graduate Research Fellow

Georgia Institute of Technology Presidential Fellow

Technological Innovation: Generating Economic Results (TI:GER) Fellow