

# Prashanth Rajivan

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Carnegie Mellon University  
Department of Social & Decision Sciences  
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## Research Interests

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- Cyber Security
- Human Factors
- Usable Security and Privacy
- Risk and Decision Making
- Team Cognition
- Deception

## Education

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**Ph.D. in Human Systems Engineering** (2011-2014)  
Human Systems Engineering, Ira A. Fulton Schools of Engineering  
**Arizona State University**

- Focus on Team Collaboration and Situational Awareness in Cyber Security
- Advisor: Dr. Nancy J Cooke
- Dissertation: Information Pooling Bias in Collaborative Cyber Forensics
- Committee: Dr. Nancy J Cooke, Dr. Marco Jannsen, and Dr. Gail-Joon Ahn

**Masters in Computer Science** (2009-2011)  
Arizona State University

- Thesis: Synthetic Task Environment for Measuring Cybersecurity Situational Awareness
- Committee: Dr. Nancy J Cooke, Dr. John Femiani, and Dr. Kevin Gary

**Bachelors in Information Technology** (2003-2007)  
Anna University, Chennai, India

## Academic Appointments

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**Postdoctoral Research Associate** (Dec 2015 - Present)  
Advisor: Dr. Cleotilde Gonzalez, Dynamic Decision Making Lab,  
Department of Social & Decision Sciences,  
**Carnegie Mellon University**, Pittsburgh, PA

- Engaged in research on adversarial behaviors and personalities in Phishing attacks
- Research on decision making (incident categorization & security-updates) and models for security risk assessments
- Research to develop metrics and models of security analyst team processes.
- Research on Human and Adversarial Machine Learning Interaction

### Postdoctoral Research Associate

(Aug 2014 - Oct 2015)

Advisor: Dr. Jean Camp, Human-Centered Security Lab,  
School of Informatics & Computing,  
Indiana University, Bloomington, IN

- Conducted multiple projects on usable security and privacy, security expertise, risk decision making and teamwork

### Graduate Research Associate

(July 2009 - July 2014)

Advisor: Dr. Nancy J Cooke, Cognitive Engineering Research on Team Tasks Lab,  
Human Systems Engineering,  
Arizona State University, Tempe, AZ

- Conducted multiple projects on team collaboration and situational awareness in cyber security defense.
- Development of simulations and synthetic task environments for behavioral research in cyber security
- Multi-Agent Modeling

## Non-Academic Experience

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### Software Engineer

(2007 - 2008)

WIPRO Technologies  
Bangalore, India

## Publications

### Dissertation

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- [1] **Rajivan, P.** (2014). Information Pooling Bias in Collaborative Cyber Forensics. Arizona State University. *Doctoral Dissertation*.

### Journal Articles

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- [1] Buchler, N., **Rajivan, P.**, Marusich, L., Lightner, L., & Gonzalez, C. (In-Press). Sociometrics and Observational Assessment of Teaming and Leadership in a Cyber Security Defense Competition. *Journal of Computer & Security*. (In-Press)
- [2] **Rajivan, P.**, & Cooke, N. J. (2017). Information Pooling Bias in Collaborative Security Incident Correlation Analysis. *Human Factors*. (In-Press) | **Finalist of Human Factors Prize in CyberSecurity**
- [3] **Rajivan, P.**, Moriano, P., Kelley, T., & Camp, L. J. (2017). Factors in an end user security expertise instrument. *Information & Computer Security*, 25(2), 190-205.

- [4] Cooke, N. J., Champion, M., **Rajivan, P.**, & Jariwala, S. (2014). Cyber Situation Awareness and Teamwork. ICST Endorsed *Transactions on Security and Safety*. Special Section on: The Cognitive Science of Cyber Defense.

## Journal Articles (In-Progress)

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- [1] **Rajivan, P.**, & Gonzalez, C. (Under-Review). Creative Persuasion: A study on adversarial behaviors in phishing attacks. Special Section on Mastering Cyberpower: Cognitive Sciences and Human Factor in Civilian and Military Cyber Security. *Frontiers in psychology*.
- [2] Curtis, S., **Rajivan, P.**, Gonzalez, C., & Jones, D. (Under-Review). Phishing attempts among the Dark Triad: Patterns of attack and vulnerability. *Psychological Science*
- [3] **Rajivan, P.**, & Camp, L.J. (In-Preparation) Attitude, Framing and Perception: A Study of Privacy Decision Making. *Computers in Human Behavior*

## Book Chapters

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- [1] **Rajivan, P.**, & Gonzalez, C. (2017) Human Factors of CyberSecurity. Human Factors & Ergonomics for the Gulf Cooperation Council: Processes, Technologies, & Practices. Taylor & Francis.
- [2] **Rajivan, P.**, & Cooke, N. J., (2017). On the Impact of Team Collaboration on Cybersecurity Situational Awareness. Theory and Models for Cyber Situation Awareness. Springer
- [3] Cooke, N. J., Myers, W. C., & **Rajivan, P.** (2014). Implications of Text Chat for Air Crew Communication & Coordination. *Advances in Aviation Psychology*. Ashgate Publishing

## Conference Full Papers (Refereed)

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- [1] Henshel, D. S., Deckard, G. M., Lufkin, B., Buchler, N., Hoffman, B., **Rajivan, P.**, & Collman, S. (2016, November). Predicting proficiency in cyber defense team exercises. In Military Communications Conference, *MILCOM 2016-2016 IEEE* (pp. 776-781). IEEE.
- [2] **Rajivan, P.**, Konstantinidis, E., Ben-Asher, N., & Gonzalez, C. (2016). Categorization of Events in Security Scenarios: The Role of Context and Heuristics. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting. (Vol. 60, No. 1, pp. 274-278). Los Angeles, CA: SAGE Publications. *HFES*.

- [3] **Rajivan, P.**, Moriano, P., Kelley, T., & Camp, J. What Can Johnny Do? (2016) Factors in an End-User Expertise Instrument. In Proceedings of the Tenth International Symposium on Human Aspects of Information Security & Assurance (*HAISA*) (p. 199).
- [4] **Rajivan, P.**, & Camp, J. (2016). Influence of Privacy Attitude and Privacy Cue Framing on Android App Choices. In Twelfth Symposium on Usable Privacy and Security (*SOUPS 2016*)
- [5] Ben-Asher, N., **Rajivan, P.**, Cooke, N., & Gonzalez, C. (2014, June). Examining the role of Power and Assets in Cyber War Through Instance-Based learning and Multi-Agent Modeling. In 14th Annual Workshop on the Economics of Information Security. Pennsylvania State University.
- [6] **Rajivan, P.**, Jannsen, M., & Cooke, N.J. (2013) Agent Based Model of Cyber Defense Analyst Team, Proceedings of the Human Factors and Ergonomics Society Annual Meeting. (Vol. 57, No. 1, pp. 314-318). Los Angeles, CA: SAGE Publications. *HFES*. | **Best Student Paper Award**
- [7] **Rajivan, P.**, Champion, M., Cooke, N. J., Jariwala, S., Dube, G., & Buchanan, V. (2013). Effects of Teamwork versus Group Work on Signal Detection in Cyber Defense Teams. In Foundations of Augmented Cognition (pp. 172-180). (*HCI*). Springer Berlin Heidelberg
- [8] Jariwala, S., Champion, M., **Rajivan, P.**, Cooke, N.J. (2012). Influence of Team Communication and Coordination on the Performance of Teams at the iCTF Competition. In Proceedings of the Human Factors and Ergonomics Society Annual Meeting (Vol. 56, No. 1, pp. 458-462). Los Angeles, CA: SAGE Publications. *HFES*.
- [9] Champion, M. A., **Rajivan, P.**, Cooke, N., & Jariwala, S. (2012, March). Team-based cyber defense analysis. In Cognitive Methods in Situation Awareness and Decision Support. 2012 IEEE International Multi-Disciplinary Conference (pp. 218-221). IEEE. *CogSIMA*
- [10] **Rajivan, P.**, Shankaranarayanan V., & Cooke, N. J. (2011). CyberCog: A Synthetic Task Environment for Studies of Cyber Situation Awareness. Presentation and proceedings of 10th International Conference on Naturalistic Decision Making. May 31-June 3. Orlando, FL *NDM*.

## Invited Talks

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- [1] Rajivan, P., Cooke, N. J. (2013). Cyber Situation Awareness at EDGE Advisory Board Meeting, October 17, 2013, Arizona State University, Tempe, AZ.

- [2] Rajivan, P., Cooke, N. J. (2013). Cognitive Engineering for Human Technology Integration to Ted Cope, Director of Basic and Applied Research, National Geospatial-Intelligence Agency, June 17,2013, Arizona State University, Tempe, AZ.
- [3] Cooke, N. J., Rajivan, P., Champion, M., & Jariwala, S. (2011). Applying cognitive engineering to cyber situation awareness. Presented at ARO MURI Review, September 8, 2011, George Mason University, Fairfax, VA.

## Posters

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- [1] Rajivan, P., & Gonzalez, C (2017). Research at Dynamic Decision Making Laboratory. Lab Poster at Annual Meeting of Human Factors and Ergonomics Society.
- [2] Rajivan, P., & Gonzalez, C. (2017). Thinking Forward: A study on adversarial behaviors and strategies of phishing attacks. Research Management Board Meeting. Army Research Labs.
- [3] Rajivan, P., & Gonzalez, C. (2017). Creative Persuasion: Adversarial Strategies in Phishing Attacks. Army Bootcamp. Collaborative Research Alliance.
- [4] Buchler, N., Rajivan, P., Marusich, L., Lightner, L., & Gonzalez, C. (2017). Sociometrics of Team Interaction in a Cyber Defense Competition. Army Bootcamp. Collaborative Research Alliance.
- [5] Buchler, N., Marusich, L., Rajivan, P., Lightner, L., & Gonzalez, C. (2016). Team Process Measurement and Evaluation of Cyber Teams in a Collegiate Cyber Defense Competition. Army Bootcamp. Collaborative Research Alliance.
- [6] Rajivan, P., Konstantinidis, E., Ben-Asher, N., & Gonzalez, C. (2016). Cyber Security Decision Making – Role of Heuristics and Analytics in a Security Categorization Task. Army Bootcamp. Collaborative Research Alliance.
- [7] Rajivan, P., Henshel, D., & Camp, J. (2015). Measuring Human Computer Security Expertise. Army Bootcamp. Collaborative Research Alliance.
- [8] Taylor, D., Rajivan, P., & Camp, J. (2015). Certified Confusion: Public Perception of Web Certificates. Emerging Researchers National (ERN) Conference in STEM

- [9] Cooke, N. J., Rajivan, P., Champion, M., & Shankaranarayanan V. (2011). CyberCog: A Synthetic Task Environment for Studies of Cyber Situation Awareness. Poster presented at ASU's Fourth Annual Workshop on Information Assurance Research and Education, May 4, 2011, Tempe, AZ.
- [10] Cooke, N. J., Rajivan, P., Champion, M., & Shankaranarayanan V.(2011). CyberCog: A Synthetic Task Environment for Studies of Cyber Situation Awareness. Poster presented at ASU's Innovation Showcase, May 4, 2011, Mesa,

## Awards

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- Finalist of Human Factors Prize for Research on Cyber Security (2017)
- Recognized as one of the ten most promising emerging leaders in UX - HFES (2014)
- Alphonse Chapanis Best Student Paper Award - HFES (2013)
- Gold Level Outstanding Student Chapter Award - HFES (2013)

## Professional Activities

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### Journal Reviewer

- ACM Transactions on Information and System Security (TISSEC)
- Journal of Cognitive Engineering and Decision Making
- Journal of Cognitive Science
- Journal of Human Factors
- Journal of Industrial Ergonomics
- Journal of Games

### Conference Reviewer

- APA Conference on Technology, Mind and Society
- ACM Conference on Human Factors in Computing Systems (CHI)
- International Annual Meeting of the Human Factors and Ergonomics Society (HFES)
- IEEE International Conference on Systems, Man and Cybernetics

### Membership

- Human Factors and Ergonomics Society
  - Cognitive Engineering and Decision Making
  - Computer Systems
  - Internet

## Research Grants

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### Under Review:

- CARNA - Cognitive Analytics for Rapid Network Assurance. PI: Thomson, Robert. Co-PI: Lebiere, Gonzalez. Key Personnel: **Rajivan**, Ben-Asher. MINERVA, DOD.

# Programming Skills

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**Languages:** C-sharp, C++ & Java

**Scripting Languages:** PHP, Javascript & JQuery

**Data Analytic tools:** R, Weka & Python

**Database:** MySQL

## References

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### Dr. Cleotilde Gonzalez

Research Professor

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### Dr. Nancy Cooke

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### Dr. Jean Camp

Professor

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### Dr. Bennett Bertenthal

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### Dr. Norbou Buchler

Lead Scientist

Cyber & Network Systems branch

Army Research Labs

Aberdeen Proving Ground, MD

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