Curriculum Vitae

Assistant Professor
Simon S. Woo
Department of Computer Science and Engineering
Department of Applied Data Science
Affiliated with
Department of Artificial Intelligence
Department of Applied Artificial Intelligence
Sungkyunkwan University , Suwon, S. Korea
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Education

Ph.D. Computer Science, 2017
University of Southern California (USC), Los Angeles, CA
Information Sciences Institute (ISI), Marina del Rey, CA
Concentrations: Machine Learning and Computer Network Security
Adviser: Professor Jelena Mirkovic
Ph.D. Thesis: Memorable, Secure, and Usable Authentication Secrets
Committee Members: Ron Artstein (CS/ICT), Kevin Knight (CS/NLP), Elsi Kaiser (Linguistics)

Master of Science, Computer Science, 2012
University of Southern California (USC), Los Angeles, CA

Master of Science, Electrical and Computer Engineering, 2005
University of California, San Diego (UCSD), CA
Concentration: Communication Theory and Systems
Master Project: Joint power control and scheduling algorithm for wireless Ad hoc network
Master Project Advisers: Professor Laurence B. Milstein and Rene L. Cruz

Bachelor of Science, Electrical Engineering, minor in Mathematics, 2003
University of Washington (UW), Seattle, WA
Senior Project Advisers: Professor Mari Ostendorf and Katrin Kirchof

Work Experience

Tenure-Track Assistant Professor
Computer Science and Engineering/Department of Applied Data Science
Sungkyunkwan University, Suwon, South Korea, 2019-Current

Tenure-Track Assistant Professor
Computer Science Department at the State University of New York, Korea (SUNY-Korea), Songdo, South Korea, 2017-2019

Verisign Research Lab/CTO Ph.D. Intern, 2016
Mentor: Dr. Eric Osterweil and Dr. Andrew West

Networking and Security Technologist/Member of Technical Staff, 2012-2014
Reasoning, Modeling, and Simulation Group, Flight Software and Data Systems Section at **NASA Jet Propulsion Lab (JPL)**

Engineering Applications Software Engineer/Member of Technical Staff, 2010-2012
Network & Security Research and System Architecting for various DoD Projects
Reasoning, Modeling, and Simulation Group, Flight Software and Data Systems Section at **NASA's Jet Propulsion Lab (JPL)**

Telecommunications Systems Engineer/Member of Technical Staff, 2005-2010
Communications and Networking Research and System Engineering
Computer Networks Group, Communication Architecture and Research Section at **NASA's Jet Propulsion Lab (JPL)**

Research Interests

- **Anomaly Detection and Adversarial Machine Learning:** Research anomaly detection and outlier detection algorithms for various applications and study robustness of the state-of-the-art machine learning algorithms, and test adversarial aspects.

- **Usable Security and Privacy, and Multi-Media Forensic:** To improve security and privacy for human-machine interfaces and machine-generated fake image detection.

- **Broad Inter-disciplinary and Convergent Research:** AI/Machine Learning, Text Mining, Electrical/Computer Engineering, Security/Privacy, Human Computer Interaction, Business Entrepreneurship, Technology Commercialization

Awards and Honors

- 한국가스공사 빅데이터경진대회 특별상 Nov, 2019

- **Best Paper Award (국가보안연구소 원장상/NSR President Award)**, Conference on Information Security and Cryptography 2018 Winter (CISC-W), Dec. 2018
- Top 7th place (Top 3rd among universities) among 400 teams in Korea for **AI R&D Challenge on Fake Face Image Detection**. sponsored by IITP, July. 2018
- **2nd Place** in Data Science Analysis Challenge for DDoS Vehicle Anomaly Detection Track (http://challenge.cisc.or.kr/), sponsored by KISA, Korea Univ., and KIISC, Dec. 2017
- **Best Paper Award**, Conference on Information Security and Cryptography 2017 Winter (CISC-W), 2017
- **Best Paper Award**, World Conference on Information Security Applications (WISA), 2016
- **Best Student Paper Award** at the ISI Graduate Research Symposium, sponsored by USC/ISI and Google, March. 2016
- **Best Student Paper Award** at the ISI Graduate Research Symposium, sponsored by USC/ISI and Google, Nov. 2014
- **Best Student Poster Award** at the ISI Graduate Research Symposium, sponsored by USC/ISI and Google, Nov. 2013
- **JPL Individual Spot Award** for "For contributions leading to successful hiring and mentoring of five summer interns," 2012
- **JPL Team Bonus Award**, "The JPL Policy-Based Network Management (PBNM) Team performed Superbly and successfully created a fundamentally novel and first-of-its-kind advanced Policy Management Technology," 2011
- **JPL Individual Spot Award** for "Performance above and beyond the call of duty in preparation of the PBM Proposal," 2011
- **NASA Honor Award** - Group Achievement Award for the SCIP System Engineering and Integration, "For outstanding contribution to the definition of NASA's Space Communication and Navigation Infrastructure required to support Constellation's Vision," 2010
- **NASA Tech Brief Awards**, 2008, 2010, 2011, 2012
- **NASA Software Award** 2008
- **Mary Gates Scholar**, University of Washington for undergraduate research, Seattle 2002

Publications

Journals

[J5] Pratik Musale, Duin Baek, Nuwan Werellagama, **Simon S. Woo**, and Bong Jun Choi*,"You Walk, We Authenticate: Gait-based Authentication in Wearable IoT Devices," IEEE Access, 2019 (**SCIE, IF 3.55**)

[J4] **Simon S. Woo**, Le Xiao, Ron Artstein, Elsi Kaiser, and Jelena Mirkovic, "Using Episodic Memory for User Authentication," *ACM Transactions on Privacy and Security,* 2019 (ACM TOPS (formerly, ACM TISSEC)), (**SCIE, IF 2.01**)

[J3] **Simon S. Woo**, "Design and Usability of 3D CAPTCHAs," Elsevier Computers & Security, 2018 (**SCIE IF 2.86**)

[J2] Hoyul Choi, Jongmin Jeong, **Simon S. Woo**, Kyungtae, Kang and Junbeom Hur, "Password Typographical Error Resilience in Honey Encryption," Elsevier Computers & Security, accepted, 2018 (Accepted, **SCIE IF 2.86**)

[J1] **Simon S. Woo** and Jelena Mirkovic, "Optimal Application Allocation on Multiple Public Clouds", *Elsevier Computer Networks Journal, Special Issue on Cloud Computing,* Volume 68, 5 August 2014, Pages 138-148 (Accepted, **SCIE IF 2.59**)

Peer-Reviewed Conference, Symposium, and Workshop Papers
YR 2019

[C46] Jelena Mirkovic and **Simon S. Woo**, "Designing for fallible humans," 2019 IEEE Humans and Cyber Security (HACS) workshop in conjunction with IEEE CogMI (Cognitive Machine Intelligence), IEEE CIC

(Collaboration and Internet Computing) and IEEE TPS (Trust, Privacy and Security of Intelligence Systems, and Applications) Los Angeles, California, USA, December 14, 2019. (**Invited Paper**)

[C45] <u>Junyaup Kim, Siho Han</u>, and **Simon S. Woo***, "Poster: Classifying Genuine Face images from Disguised Face Images," 2019 IEEE International conference on Big Data (IEEE BigData 2019), Los Angeles, CA, USA

[C44] <u>Joon Kuy Han</u>, Hyoungshick Kim and **Simon S. Woo***, "Poster: Nickel to Lego: Using Foolgle to Create Adversarial Examples to fool Google Cloud Speech-to-Text API," The 26th ACM Conference on Computer and Communications Security (CCS), London, UK, 2019

[C43] <u>Keeyoun Kim</u>, Byeongrak Seo, Sang-Hoon Rhee, Seungmoon Lee, and **Simon S. Woo***, "Deep Learning for Blast Furnaces: Skip-Dense Layers Deep Learning Model to Predict the Remaining Time to Close Tap-holes for Blast Furnaces", CIKM'19, Beijing, China, Nov, 2019. (**Acceptance rate=21%, BK Computer Science IF=3**)

[C42] <u>Hyeon Seong Jeon, Young Oh Bang,</u> and **Simon S. Woo*,** "FakeTalkerDetect: Effective and Practical Realistic Neural Talking Head Detection with a Highly Unbalanced Datase", 10th International Workshop on Human Behavior Understanding (HBU), held in conjunction with ICCV'19 Nov, 2019 - Seoul, S. Korea

[C41] <u>Youjin Shin, Sangyup Lee, Shahroz Tariq,</u> and **Simon S. Woo*,** "Tensor Decomposition for Anomaly Detection in Space", Workshop on Tensor Methods for Emerging Data Science Challenges (TMEDSC), held in conjunction with KDD'19 Aug 5, 2019 - Anchorage, Alaska, USA

[C40] <u>Jinwoo Cho, Shahroz Tariq, Sangyup Lee, Young Geun Kim</u>, Jeong-Han Yun, Jonguk Kim, Hyoung Chun Kim and **Simon S. Woo**, "Contextual Anomaly Detection by Correlated Probability Distributions using Kullback-Leibler Divergence", 5th Workshop on Mining and Learning from Time Series, held in conjunction with KDD'19 Aug 5, 2019 - Anchorage, Alaska, USA

[C39] <u>Shahroz Tariq, Sangyup Lee, Youjin Shin</u>, Myeong Shin Lee, Okchul Jung, Daewon Chung, and **Simon S. Woo***, "Detecting Anomalies in Space using Multivariate Convolutional LSTM with Mixtures of Probabilistic PCA", SIGKDD, Alaska, USA, 2019. (**BK Computer Science 우수학회 IF=4**)

[C38] Yuri Son, Geumhwan Cho, Hyoungshick Kim and **Simon S. Woo**, "Understanding Users Risk Perceptions about Personal Health Records Shared on Social Networking Services", ASIACCS: The 12th ACM Asia Conference on Computer and Communications Security, Auckland, New Zealand, 2019. (**Acceptance Rate = 22.5%, BK Computer Science 우수학회 IF=1**)

[C37] <u>Youjin Shin</u> and **Simon S. Woo*,** "What Is in Your Password? Analyzing Memorable and Secure Passwords using a Tensor Decomposition" (Short Paper), The Web Conference (WWW), May 2019 (**Acceptance Rate 19.9%, BK Computer Science 우수학회 IF=3**)

[C36] <u>Shahroz Tariq</u>, <u>Sangyup Lee</u>, Ho Young Kim, <u>Youjin Shin</u>, and **Simon S. Woo*** "GAN is a Friend or Foe? A Framework to Detect Various Fake Face Images," ACM SAC Cyprus April 2019, (**Acceptance Rate 25%, BK Computer Science 우수학회 IF=1**).

YR 2018

[C35] <u>Joonkyu Han</u>, and **Simon Woo*,** "Poster: Memorability and Security of Image and Text Integrated Authentication System," ACSAC 2018, Dec, Puerto Rico, USA

[C34] Daehwa Lee, Bedeuro Kim, Woojoong Ji, **Simon S. Woo** and Hyoungshick Kim, "Survey on Blockchain Based Identity management system," Proc. Conference on Information Security and Cryptography 2018 Winter (CISC-W), Seoul, South Korea, Dec. 2018

[C33] <u>Soyoon Jeon, Jihye Woo, Ji Won Choi,,</u> Hyoungshick Kim, and **Simon Woo***, "Evaluating and Breaking Naver's Audio CAPTCHA using Off-the-Shelf Speech-to-text APIs," Proc. Conference on Information Security and Cryptography 2018 Winter (CISC-W), Seoul, South Korea, Dec. 2018

[C32] <u>Jihye Woo, Soyoon Jeon, Ji Won Choi,</u> Hyoungshick Kim, and **Simon Woo***, "Understanding Users' Perception on Digital Certificate and Their Web Browser Usages in Korea," Proc. Conference on Information Security and Cryptography 2018 Winter (CISC-W), Seoul, South Korea, Dec. 2018 (**Best Paper: 국가보안연구소 원장상**)

[C31] <u>Yimin Zhu</u> and **Simon S. Woo*** "Poster: Adversarial Product Review Generation with Word Replacements," 25th ACM Conference on Computer and Communications Security (CCS 2018), Toronto, USA, 2018

[C30] <u>Shahroz Tariq</u>, <u>Sangyup Lee</u>, Ho Young Kim, <u>Youjin Shin</u>, and **Simon S. Woo*** "Detecting Both Machine and Human Created Fake Face Images In the Wild," 2nd International Workshop on Multimedia Privacy and Security (**MPS 2018**), co-located with 25th ACM Conference on Computer and Communications Security (CCS 2018), Toronto, USA, 2018

[C30] <u>Shahroz Tariq</u>, <u>Sangyup Lee</u>, Huy Kang Kim, and **Simon S. Woo*** "Detecting In-Vehicle CAN Message Attacks using Heuristics and RNNs," 3rd International workshop on Information & Operational Technology (IT & OT) security systems (**IOSec 2018**), co-located with 21st International Symposium on Research in Attacks, Intrusions and Defenses (RAID 2018), Crete, Greece, Sept 2018

[C29] Simon S. Woo* and Jelena Mirkovic "GuidedPass: Guiding users to create both more memorable and strong passwords", 21st International Symposium on Research in Attacks, Intrusions and Defenses (**RAID 2018**), Crete, Greece, Sept 2018 (**Acceptance Rate 22.8%, BK Computer Science 우수학회 IF=2**).

[C27] Ameya Hanesamgar, **Simon S. Woo***, Chris Kanich, and Jelena Mirkovic, "Poster: Leveraging Semantic Transformation to Investigate Password Habits and Their Causes," Usenix The Fourteenth Symposium on Usable Privacy and Security (**SOUPS 2018**), Baltimore, USA, 2018

[C26] <u>Keeyoung Kim</u> and **Simon S. Woo***, "When George Clooney is not George Clooney: Using GenAttack to Deceive Amazon's and Naver's Celebrity Recognition APIs", 33rd IFIP TC-11 SEC 2018 International Conference on Information Security and Privacy Protection (**IFIP-SEC**), Poznan, Poland, Sept 2018 (**Acceptance Rate 36%, BK Computer Science 우수학회 IF=1, Nominated for the Best Student Paper**).

[C25] <u>Keeyoung Kim</u> and **Simon S. Woo***, "Generating Adversarial Images using Genetic Algorithm", The Second International Workshop on The Bright and Dark Sides of Computer Vision: Challenges and Opportunities for Privacy and Security (CV-COPS2018) In conjunction with the IEEE **CVPR** 2018 , Salt Lake City, USA, June 2018.

[C24] Jusop Choi, Taekkyung Oh, William Aiken, **Simon S. Woo** and Hyoungshick Kim, "Poster: I can't hear this because I am human: A novel design of audio CAPTCHA system", The 11th ACM Asia Conference on Computer and Communications Security (ACM ASIACCS), Incheon, Korea, 2018

[C23] **Simon S. Woo***, "Benefits and Challenges of Long Term Self-Tracking to Prevent Lonely Deaths and Detect Signs of Life," A Short Workshop on Next Steps Towards Long Term Self Tracking at **ACM SIG CHI2018**, April, 2018, Montreal, Canada

[C22] Ameya Hanamsagar, **Simon S. Woo*,** Jelena Mirkovic, and Chris Kanich, "Leveraging Semantic Transformation to Investigate Password Habits and Their Causes," ACM SIG CHI 2018 (**Acceptance Rate 25.7%, BK Computer Science 우수학회 IF=4**)

[C21] **Simon S. Woo***, and Jelena Mirkovic, "Memorablity and Security of Different Passphrase Generation Methods," Review of KIISC (한국정보보호학회지), Feb. 2018

[C20] **Simon S. Woo***, Kyeong Joo Jung, and Bong Jun Choi, "Survey on Current Password Composition Policies," Review of KIISC (한국정보보호학회지), Feb. 2018

YR 2017
[C19] **Simon S. Woo***, Wenzhe Li, and Hyeran Jeon, "Towards Machine Generated Passwords," Proc. Conference on Information Security and Cryptography 2017 Winter (CISC-W), Seoul, South Korea, Dec. 2017. (**Best Paper**)

[C18] Pratik Musale, Duin Baek, **Simon S. Woo**, and Bong Jun Choi, "Lightweight Authentication for IoT," Proc. ACM CoNEXT, Seoul, South Korea, Dec. 2017. (Student Research Workshop)

[C17] **Simon S. Woo***, "Computer Vision Attacks against 3D CAPTCHAs", The First International Workshop on The Bright and Dark Sides of Computer Vision: Challenges and Opportunities for Privacy and Security (CV-COPS2017) In conjunction with the IEEE CVPR 2017, Honolulu, USA, July 2017.

[P8] **Simon S. Woo**, Jelena Mirkovic, Ron Artstein, and Elsi Kaiser, "Life-Experience Passwords (LEPs)", Usenix SOUPS 2017 (Invited Poster), Santa Clara, USA, July 2017.

YR 2016
[C16] **Simon S. Woo** and Jelena Mirkovic. "Improving Recall and Security of Passphrases Through Use of Mnemonics", Proceedings of the 10th International Conference on Passwords (Passwords), Bochum, Germany, 2016.

[C15] **Simon S. Woo**, Jelena Mirkovic, Elsi Kaiser, and Ron Artstein, "Life Experience Passwords (LEPs)", Annual Computer Security Applications Conference (ACSAC), Los Angles, 2016 (**Acceptance Rate: 22.8%, BK Computer Science 우수학회 IF=2**)

[C14] **Simon S. Woo***, Jingul Kim, Duoduo Yu, and Beomjun Kim, "Exploration of 3D Texture and Projection for New CAPTCHA Design," The 17th World Conference on Information Security Applications (WISA), Jeju, 2016 (**Best Paper**)

[C13] **Simon S. Woo***, Zuyao Li, and Jelena Mirkovic, "Good Automatic Authentication Question Generation", International Natural Language Generation Conference (INLG), Edinburgh, 2016

[P8] **Simon S. Woo**, and Jelena Mirkovic, "Exploration of Memorable and Secure Mnemonic Passphrase Generation". Information Sciences Institute Graduate Student Symposium (ISI-GSS), March, 2016 (**Best Student Paper**)

YR -2015
[C12] **Simon S. Woo*** and Harsha Manjunatha, "Empirical Data Analysis on User Privacy and Sentiment in Personal Blogs", Proceeding of the 2nd ACM SIGIR-International Workshop on Privacy-Preserving IR: When Information Retrieval Meets Privacy and Security (PIR 2015). 2015.

[C11] Jelena Mikovic, Aimee Tabor, **Simon S. Woo**, and Portia Pusey, "Engaging Novices in Cybersecurity Competitions A Vision and Lessons Learned at ACM Tapia 2015," In Proceedings of the USENIX Security-Summit on Gaming, Games and Gamification in Security Education (3GSE), 2015.

[C10] **Simon S. Woo**, Jelena Mikovic, Ron Artstein, and Elsi Kaiser, "Life-Experice Passwords", Who are you?! Adventures in Authentication: ACM SOUP-WAY Workshop, 2014, Menlo Park, CA

[P7] **Simon S. Woo***, and B. Kim, "3D Object CAPTCHA", Information Sciences Institute Graduate Student Symposium (ISI-GSS), Nov, 2014 (**Best Student Paper**)

[P6] **Simon S. Woo***, B. Kim, W. Jun, and J. Kim, "3DOC: 3D Object CAPTCHA", 23rd Internaltional World Wide Web (WWW) Conference, 2014

[P5] **Simon S. Woo**, Jelena Mirkovic, and Elsi Kaiser, "Life Experience-Passwords", Network and Distributed System Security (NDSS) Symposium, Feb, 2014

[P4] **Simon S. Woo**, Jelena Mirkovic, Elsi Kaiser and Pat Dyroff, "Life Experience-Passwords", Information Sciences Institute Graduate Student Symposium (ISI-GSS), Nov, 2013 (**Best Student Poster**)

Satellite Systems

[C9] **Simon S. Woo***, "*Analysis of Proximity-1 Space Link Interleaved Time Synchronization Protocol*," IEEE *Globecom* 2011, Houston, TX (**Acceptance rate: 36%)**

[C8] E. Jennings, J. Segui, and **Simon S. Woo***, "MACHETE: A Protocol Evaluation Tool for Space-Based Networking Architecture and Simulation," AIAA *SpaceOps* 2010, Huntsville, AL

[C7] **Simon S. Woo***, David Mills, and J. Gao, "Space Time Distribution and Synchronization Protocol Development for Mars Proximity Link", AIAA *SpaceOps* 2010

[C6] E. Jennings, R. Borgen, C. Chevalier, E. Wesley, Sam Nguyen, John Segui, Tudor Stoenescu, Shin-Ywan Wang, and **Simon S. Woo**, "Space Communications and Navigation (SCaN) Network Simulation Tool Development and Its Use Cases", AIAA, *Modeling and Simulation Technologies* (AIAA-MST) Conference,2009

[C5] **Simon S. Woo*** and Tudor Stoenescu, "Efficient File Sharing by multicast - P2P protocol using network coding and rank based peer selection",IEEE 69th Vehicular Technology Conference (IEEE-VTC) 2009-Spring, Barcelona, Spain, April, 2009

[C4] Esther H. Jennings, Sam P. Nguyen, Shin-Ywan Wang, and **Simon S. Woo**, "Interfacing Space Communications and Navigation Network Simulation with Distributed System Integration Laboratories (DSIL)", AIAA *SpaceOps 2008*

[C3] **Simon S. Woo*** and Mike Cheng, "Prioritized LT codes, "*Annual Conference on Information Sciences and Systems* (*CISS),* Princeton, NJ, March 2008.

[P2] **Simon S. Woo** - 332 Mike Cheng - 332; Kar-Ming Cheung- 332; Chris Chang, Matt Klimesh, Sam Dolinar – 332, "Improved In Situ Communications Using Network Coding", Research and Technology Development (R&TD) Poster session, Pasadena, Nov, 2008

[P1] Mike Cheng, **Simon S. Woo**, Kar-Ming Cheung, Sam Dolinar, and Jon Hamkins, "Improved In Situ Communications Using Network Coding", *Research and Technology Development Poster session*, (R&TD), Pasadena, Nov, 2007

[C2] **Simon S. Woo**, Esther Jennings, and Loren Clare, "A Simulation Tool for ASCTA Microsensor Network Architecture," *IEEE Aerospace Conference, Big Sky,* MT, March, 2008

[C1] **Sung U** and Jay Gao, "CFDP Performance Over Weather- Dependent Ka-Band Channel," AIAA *SpaceOps 2006*, Rome, Italy

Book Chapters

[B2] **Simon S. Woo,** David Mills, and Jay Gao, Chapter 29 of Progress in Astronautics and Aeronautics, "Space Operations: Exploration, Scientific Utilization & Technology Development,", *AIAA, 2011*

[B1] **Simon S. Woo** and Jay Gao, Chapter 8 of "Space Operations: Mission Management, Technologies, and Current Applications**-**CFDP Performance Over Weather- Dependent Ka-Band Channel," *Progress in Astronautics and Aeronautics Series*, 220 Published by AIAA, © 2007

Book Review

[BR1] Mills, D.L. *Computer Network Time Synchronization: the Network Time Protocol on Earth and in Space, Second Edition*. CRC Press, March 2011, 466 pp, ISBN 978-1-4398-1463-5, (http://www.eecis.udel.edu/~mills/book.html)

Inventions/Awarded New NASA Technology Report (NTR)

[N10] Autonomous Information Unit (AIU) (NTR #49106) for Distributed Access Control, Awarded on April 2013

[N9] Autonomous Information Unit (AIU) (NTR #49106) for Distributed Access Control, Awarded on April 2013

[N8] JPL Policy Based Network Management (PBM) Cybersecurity Testbed Design (NTR # 48963), Awarded on Dec, 2012

[N7] Autonomous Byte Stream Randomizer (NTR#48495), Awarded on Nov, 2011

[N6] Autonomous Information Unit (AIU) for the Policy-Based Adaptive Network (NTR#48224), Awarded on Sept, 2011

[N5] Software Modules for Proximity-1 Space Link Interleaved Time Synchronization (PITS), (NTR # 47404), Awarded on Sept, 2010

[N4] Time Synchronization and Distribution Mechanisms for Space Networks (NTR # 47403), Awarded on Nov, 2009

[N3] Space Communications and Navigation (ScaN) Network Simulation Tool (NTR#46896): the contributor for DSIL scenario, ScaN PHY model, and Link budget library interface development, Awarded on Feb, 2009

[N2] Prioritized LT Codes (NTR#46653) the primary contributor for developing Prioritized LT codes, Awarded on March, 2009

[N1] Simulation Tool for ASCTA Microsensor Network Architecture (STAMiNA) (NTR#45213): Key contributor for STAMiNA development, Awarded on June, 2007

Awarded Software Copyrights/Licenses

[S-L6] Autonomous Information Unit (AIU) for Distributed Access Control, Feb, 2014

[S-L5] Enhanced Precision Time Protocol (PTP), Feb, 2014

[S-L4] JPL Policy Based Network Management (PBM) Cybersecurity Testbed Design, Feb, 2014

[S-L3] Autonomous Byte Stream Randomizer, Jan, 2012

[S-L2] Space Communications and Navigation (SCaN) Network Simulation Tool, April, 2009

[S-L1] Simulation Tool for ASCTA Microsensor Network Architecture (STAMiNA), August, 2007

NASA Tech Brief Awards

[TB6] Autonomous Byte Stream Randomizer, Awarded on July 2013

[TB5] Software Modules for Proximity-1 Space Link Interleaved Time Synchronization (PITS), Awarded on July, 2012

[TB4] Autonomous Information Unit (AIU) for Fine-Grain Data Access Control and Mission Data Protection in Net-Centric System Testing Environment, 2011

[TB3] Time Synchronization and Distribution Mechanisms for Space Networks (Space NTP), Dec 2011, http://www.techbriefs.com/ntb1211

[TB2] Prioritized Luby Transform (LT) Codes, 2011, http://www.techbriefs.com/component/content/article/9894

[TB1] Simulating Operation of a Complex Sensor Network, 2008, http://www.techbriefs.com/component/content/article/2703