KEITH D. GREMBAN
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EDUCATION

Ph.D., Computer Science
Carnegie Mellon University, Pittsburgh, PA
Thesis Title: *Combinatorial Preconditioners for Large, Sparse, Symmetric, Positive-definite Linear Systems*

M.S., Computer Science
Carnegie Mellon University, Pittsburgh, PA

M.S., Applied Mathematics
Michigan State University, East Lansing, MI

B.S., Mathematics
Michigan State University, East Lansing, MI

PROFESSIONAL EXPERIENCE

Research Professor   **2019-present**
Technology, Cybersecurity, and Policy Program
College of Engineering and Applied Science
University of Colorado Boulder

Research faculty pursuing research at the intersection of wireless communications, cybersecurity, and policy. Currently exploring, in collaboration with faculty of the Silicon Flatirons Center in the University of Colorado School of Law, the unique vulnerabilities of systems dependent on wireless connectivity.

Director, Institute for Telecommunication Sciences   **2015-2019**
National Telecommunications and Information Administration
U.S. Department of Commerce
Boulder, CO

Senior Executive (SES) directing a research and engineering laboratory. The Institute for Telecommunication Sciences (ITS) is the research and engineering laboratory for the National Telecommunications and Information Administration (NTIA), the executive branch agency that serves as the principal advisor to the President on telecommunications and information policy.

Founder, Shavano Systems LLC   **2014-2015**
Highlands Ranch, CO

Founded Shavano Systems to pursue research and development opportunities in communications, cybersecurity, and autonomous systems, as well as to provide consulting services in systems engineering and program management.

Program Manager, Strategic Technologies Office   **2011-2014**
Defense Advanced Research Projects Agency (DARPA)
Arlington, VA

Responsible for conceiving, developing, managing, and transitioning research and development projects in the areas of wireless communications and electronic warfare.

Director, Computer Systems Research   **2009 - 2010**
Director, Denver Advanced Technology Division   **2007 - 2009**
SET Corporation, an SAIC Company
Greenwood Village, CO

Leadership responsibility for a team of senior engineers and scientists engaged in activities ranging from basic research, through technology development, to deployment and maintenance of operational systems. Technical responsibility for systems engineering and software engineering on several advanced systems developed for deployment with operational military units.

Assistant Vice President and Division Manager   **2006 - 2007**
Senior Scientist   **2002 - 2006**
Science Applications International Corporation (SAIC)
Englewood, CO

Managed the Intelligent Systems Applications Division, which specialized in command and control decision aids, robotics, and autonomous systems. Leadership responsibility for a team of engineers and scientists performing applied research and technology development.

Senior Research Engineer   **1998 - 2002**
SRI International
Englewood, CO

Performed research in efficient information dissemination over wireless networks. Led technical teams performing software development and systems engineering on a variety of research projects.

Senior Systems Engineer   **1997 - 1998**
Computing Devices International (CDInt)
Englewood, CO

Performed detailed technical work and provided technical leadership for programs involving decision aids and soldier systems.

Senior Scientist   **1995 - 1998**
CTA Incorporated
Englewood, CO

Performed detailed technical work and provided technical leadership for programs involving decision aids and process automation.

Graduate Student and Research Assistant   **1988 - 1995**
School of Computer Science
Carnegie Mellon University
Pittsburgh, PA

Performed research in computational mathematics, graph theory, and computer vision. Thesis title: *Combinatorial Preconditioners for Large, Sparse, Symmetric, Positive Definite Linear Systems.*

Staff Engineer   **1980 - 1988**
Martin Marietta Corporation
Denver, CO

Performed research and development in computer vision and robotics.

P R O F E S S I O N A L   A C H I E V E M E N T S

Professional Activities
- Founding Editor-in-Chief, IEEE Internet of Things Magazine, 2016 – present.
- Co-Organizer
  - Silicon Flatirons Roundtable: Spectrum Vulnerabilties, March 2019
  - Silicon Flatirons Workshop: Saving our Spectrum – Handling Radio Layer Vulnerabilities in Wireless Systems, October 2019
- Invited speaker or panelist at:
  - Smart Regions Conference, 2018
  - International Symposium on Advanced Radio Technology, 2018
  - Military IoT and Sensors Summit, 2018
  - Denver Smart Cities Forum, 2018
  - IoT Workshop at IEEE Radio and Wireless Week, 2018
  - IoT Workshop at IEEE Prognostics and Health Maintenance, 2017
  - IEEE EMC 2017
  - IoT Workshop at IEEE CQR, 2017
  - IEEE Military Communications Conference (MilCom), 2011, 2014
  - NSF Spectrum Management Radio Frequency Workshop, Mayaguez, Puerto Rico 2016
  - Silicon Flatirons Conference "Improving Resilience in Cybersecurity and Spectrum", 2017
  - Silicon Flatirons Conference "Spectrum: Next Generation Interference Resolution and Enforcement"
  - CTIA Wireless 2015
  - Smartphones 2013, 2014
  - Fascinating Lecture in Computer Science (FLiCS) at Villanova University, 2014
- Track Chair, Special Topics, IEEE Military Communications Conference (MilCom), 2012, 2013
- Panel Organizer & Moderator, IEEE Military Communications Conference (MilCom), 2016, 2017

Significant Publications
- T. Strayer, S. Nelson, A. Caro, J. Khoury, B. Tedesco, O. DeRosa, C. Clark, K. Sadeghi, M. Matthews, J. Kurzer, P. Lundrigan, V. Kawadia, D. Ryder, K. Gremban, W. Phoel, *Content sharing with mobility in an infrastructureless environment*. **Computer Networks**, 144:1-16, October 2018.
- F. H. Sanders, K. E. Davis, and K. D. Gremban, *A 53-year History of Spectrum Efficiency Studies and Recommended Future Directions*, **NTIA Technical Report** TR-18-530, 2018.
- K. Murray, J. Lowrance, K. Sharpe, D. Williams, K. Gremban, K. Holloman, C. Speed, and R. Tynes, *Toward Culturally Informed Option Awareness for Influence Operations with S-CAT,* **4th International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction** (SBP11), Springer, vol. 6589, pp. 2-9, March 2011**.**
- K. Murray, J. Lowrance, K. Sharpe, D. Williams, K. Gremban, K. Holloman, and C. Speed, *Capturing culture and effects variables using structured argumentation.* **1st International Conference on Cross-Cultural Decision Making,** 2010**.**
- K. Sharpe, K. Gremban, and K. Holloman, *Evaluating the impact of culture on planning and executing multinational joint force stability, security, transition and reconstruction operations,* **5**[th] **International Conference on Knowledge Systems for Coalition Operations**, *2007.*

- F. Hinchion, P. Mulgaonkar, K. Gremban, K. Nicewarner, D. Wilkins, and S. Galuga, *Peer to peer information management for tactical situation awareness systems*, **MILCOM** 2003.
- K. D. Gremban, G. L. Miller, and S-H Teng, *Moments of inertia and graph separators*, **Journal of Combinatorial Optimization,** 1(1):79-105, 1997
- K. D. Gremban, *Combinatorial preconditioners for large, sparse, symmetric, positive definite linear systems.* Ph.D. thesis, available as technical report CMU-CS-96-123.
- B. A. Anderson, K. D. Gremban, and B. Young, *Shipyard operational improvement through process management*. **1997 Ship Production Symposium**, 1997.
- K. D. Gremban, G. L. Miller, and M. Zagha, *Performance evaluation of a new parallel preconditioner.* **Proc. of the 9th International Parallel Processing Symposium,** 1995
- K. D. Gremban and K. Ikeuchi, *Planning multiple observations for object recognition*. **The International Journal of Computer Vision**, 12(2/3): 137-172, 1994
- K. D. Gremban and K. Ikeuchi, *Appearance-based vision and the automatic generation of object recognition programs*. **Three-Dimensional Object Recognition Systems**, A. K. Jain and P. J. Flynn (editors), Elsevier Science Publishers, 1993
- M. A. Turk, D. G. Morgenthaler, K. D. Gremban, and M. Marra, *VITS - A vision system for autonomous land vehicle navigation*. **IEEE Transactions on Pattern Analysis and Machine Intelligence**, vol. T-PAMI 10(3): 342-360, 1988