

# **Professor Ravi Sandhu**

## **University of Texas at San Antonio**

**Executive Director and Founder, Institute for Cyber Security**

**Lutcher Brown Endowed Chair in Cyber Security**

**Professor of Computer Science (College of Science)**

**Professor of Electrical & Computer Engineering (College of Engineering)**

**Professor of Information Systems and Technology Management (College of Business)**

**Also Chief Scientist and Co-Founder, TriCipher**

## **Contact**

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## **Degrees**

<b>Degree</b>	<b>Major</b>	<b>University</b>	<b>Year</b>
Ph.D.	Computer Science	Rutgers University, New Jersey	1983
M.S.	Computer Science	Rutgers University, New Jersey	1980
M.Tech.	Computer Technology	Indian Institute of Technology, New Delhi	1976
B.Tech.	Electrical Engineering	Indian Institute of Technology, Bombay	1974

## **Academic Career**

- **Univ. of Texas at San Antonio**, 2007 onwards: As above (50% in CS, 25% each in ECE and ISTM).
- **George Mason University**, 1995-2007: Full Prof., 1989-1995: Assoc. Prof. (Information Security).
- **Ohio State University**, 1983-1989: Assistant Professor, 1982-1983: Instructor (Computer Science).

## **Career Focus and Goals**

My career has focused on high impact research and practice in cyber security starting with my doctoral thesis. Effective cyber security requires science, engineering, business, policy and people skills. My goal is to instill this culture in the cyber-security discipline and provide leadership in all elements.

## **Institute for Cyber Security Mission**

World-class research with commercialization.

## **Professional Recognition**

- **Citations and Impact.** 10,000+ citations at Google Scholar, including #1 and #2 papers in access control with 2800+ and 900+ citations respectively.
- **IEEE Computer Society Technical Achievement Award, 2004.** “For outstanding and pioneering contributions to information security including innovation of the RBAC model and usage control.”
- **IEEE Fellow 2002.** “For contributions to the field of information and system security.”
- **ACM Fellow 2001.** “For technical contributions to the field of info. and system security, notably access control models and systems, and professional leadership in research journals and conferences.”

## **Highly Cited Papers at Google Scholar Include**

### **Role-Based Access Control**

- Role-Based Access Control Models, IEEE Comp., 29(2):38-47, 1996. 2800+ hits. #1 in access control.
- Proposed NIST Std. for RBAC. ACM TISSEC, 4(3):224-274, 2001. 900+ hits. #2 in access control.
- The ARBAC97 Model for Role-Based Admin. of Roles. ACM TISSEC, 2(1):105-135, 1999. 400+ hits.
- The NIST Model for Role-Based Access Control. 5<sup>th</sup> ACM RBAC:47-63, 2000. 300+ hits.
- Role-Based Authorization Constraints Specification. ACM TISSEC, 3(4):207-226, 2000. 200+ hits
- Configuring RBAC to Enforce MAC and DAC. ACM TISSEC, 3(2):85-106, 2000. 200+ hits.
- Numerous others with 100+ hits.

## Usage Control

- The UCON<sub>ABC</sub> Usage Control Model, ACM TISSEC, 7(1):128-174, 2004. 100+ hits.

## Access Control Tutorials

- Access Control: Principles and Practice. IEEE Communications, 32(9): 40-48, 1994. 300+ hits.
- Lattice-Based Access Control Models. IEEE Computer, 26(11): 9-19, 1993. 300+ hits.

## Access Control Earlier Models

- Task-based Authorization Controls. 11<sup>th</sup> IFIP 11.3 Data and Application Sec.:262-275, 1997. 100+ hits.
- The Typed Access Matrix Model. 13<sup>th</sup> IEEE Security and Privacy (Oakland):122-136, 1992. 100+ hits.
- Toward a Multilevel Secure Relational Data Model, SIGMOD:50-59, 1991. 100+ hits.
- Transaction Control Expressions for Separation of Duties. 4<sup>th</sup> ACSAC:282-286, 1988. 100+ hits.
- The Schematic Protection Model, Journal of the ACM, 35(2):404-432, 1988. 100+ hits.
- Crypto. Implementation of a Tree Hierarchy for Access Control. IPL, 27(2):95-98, 1988. 100+ hits.

## Research Highlights

- **Statistics:** 170+ papers (with 50+ co-authors), 10 USA patents, 13 PhD graduates, 30+ research grants.
- **Sponsors:** include NSF, NSA, NRO, NRL, AFOSR, NIST, DARPA, ARDA, AFOSR, Sandia, State Dept., DOE, IRS, RADC, FAA, Intel, Northrop Grumman, Lockheed Martin, ITT, Verizon.
- **Ongoing research initiatives include:** The PEI (policy, enforcement, implementation) layered models methodology, Innovative applications of modern trusted computing, Development and applications of the UCON usage control model, Next-generation role-based access control, Security for the semantic web, Stealthy Botnet Detection, Security and Privacy for Social Networks, Web 2.0 Security, Secure Information Sharing.
- **Earlier research:** My research on RBAC has been instrumental in establishing it as the preferred form of access control, including its acceptance as an ANSI/NIST standard in 2004. My earlier research on numerous access control models remains influential and state-of-the-art.

## Professional Leadership Includes

- Founding Editor-in-Chief, ACM Transactions on Information & Systems Security (TISSEC), 1997-2004.
- Chairman, ACM Special Interest Group on Security Audit and Control (SIGSAC), 1995-2003.
- Security Editor, IEEE Internet Computing, 1998-2004.
- Conference Founder: ACM CCS (1993), ACM SACMAT (1995). Both very highly regarded.
- Conference Steering Committees: ACM CCS (1993-2003 Chair, 2003-2007 Member), ACM SACMAT (1995-2008 Chair), IEEE CSF (1992-2008 Member).
- Conference Program Chair: IEEE CSF (1991, 1992), ACM CCS (1993, 1994, 2002), ACM SACMAT (1995), ACSAC (1996), IFIP WG 11.3 (1996), ACM CSAW (2007).
- Conference General Chair: IEEE CSF (1993, 1994), ACM CCS (1996), ACM SACMAT (2001, 2002).
- Conference Program Committees and Other Conference Activities: too numerous to track.

## Entrepreneurial and Consulting Career

- TriCipher Inc., 2000 onwards, Chief Scientist and Co-Founder
- Consultant to numerous organizations including: McAfee, Trusted Information Systems, National Institute of Standards and Technology, Verizon, SETA Corporation, Argonne National Laboratory, Singapore Management University, Northrop Grumman, Integris Health.

## Teaching Career

- My teaching and curriculum development career has focused on cyber security at the graduate level.
- I have presented short courses, tutorials and invited lectures all over the world including Asia, Australia, Europe, North America and South America.

## Personal

- US Citizen since 1997. Born in India. Schooled at Doon School and IITs. Married with two sons.