Evangelos Kranakis (Carleton University, Ottawa, Canada)

Friday October 30, 2015; 14h00, Room C06, Télécom SudParis, Evry.

Title

Optimization Problems in Infrastructure Security

Abstract

How do we identify and prioritize risks and make smart choices based on fiscal constraints and limited resources? The main goal of infrastructure security is to secure, withstand, and rapidly recover from potential threats that may affect critical resources located within a given bounded region. In order to strengthen and maintain secure, functioning, and resilient critical infrastructure, proactive and coordinated efforts are necessary.

Motivated from questions raised by infrastructure security, in this talk we survey several recent optimization problems whose solution has occupied (and continues to occupy) computer science researchers in the last few years. Topics discussed include: (1) Patrolling, (2) Sensor Coverage and Interference, (3) Evacuation, (4) Domain Protection and Blocking.

The central theme in all the problems mentioned above will involve mobility in that the participating agents will be able to move over a specified region with a given speed.

Security in itself is undoubtedly a very broad and complex task which involves all layers of the communication process from physical to network. As such the limited goal of this survey is to outline existing models and ideas and discuss related open problems and future research directions, pertaining to optimization problems in infrastructure security.

Short Bio

Evangelos Kranakis is Chancellor's Professor at the Computer Science Department of Carleton University. He received a B.Sc. (in Mathematics) from the University of Athens, Greece, in 1973 and a Ph.D. (in Mathematical Logic) from the University of Minnesota, USA, in 1980. From 1980 to 1982, he was at the Mathematics Department of Purdue University, USA, from 1982 to 1983 at the mathematisches institut of the University of Heidelberg, Germany, from 1983 to 1985 at the Computer Science Department of Yale University, USA, from August to December of 1985 at the Computer Science Department of the Universiteit van Amsterdam, and from 1986 to 1991 at the Centrum voor Wiskunde en Informatica (CWI) in Amsterdam, The Netherlands. He joined the faculty of the School of Computer Science of Carleton University in the Fall of 1991.

He has published in the analysis of algorithms, bioinformatics, communication and data (ad hoc and wireless) networks, computational and combinatorial geometry, distributed computing, and network security. He is the author of Primality and Cryptography (Wiley-Teubner series in Computer Science, 1986), and co-author of Boolean Functions and Computation Models with Peter Clote (Springer Verlag Texts in Theoretical Computer Science, 2002) and Principles of Ad Hoc Networking with Michel Barbeau (Wiley, 2007). His editorial activities include Associate Editor of International Journal of Computer Science & Applications (IJCSA), Editorial Board of Algorithms, Editorial Board of Discrete Mathematics, Algorithms and Applications, Editorial Board of Electronic Proceedings in Theoretical Computer Science (EPTCS)

He was director of the School of Computer Science from 1994 to 2000. He received the Carleton Research Achievement award in 2000. He has been in the RMC (Research Management Committee) of MITACS (Mathematics of Information Technology and Complex Systems) since 1998. He was IT (Information Technology) Theme Leader from 1998 to 2004 and CNS (Communication, Networks, and Security) Theme Leader from 2004 to 2010 in the MITACS NCE (Networks of Centers of Excellence). He served in the NSERC Grant Selection Committee for the years 2008, 2009, and 2010. He became Carleton University Chancellor's Professor in 2006.