

# Vasileios Kemerlis

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## Research Interests

I am interested in all aspects of systems and software security, with a focus on OS kernel protection, software hardening, and information flow tracking.

## Education

- Summer 2015 (expected) **Ph.D. in Computer Science**, *Columbia University*, Department of Computer Science, Graduate School of Arts and Sciences, New York, NY, USA.  
*Advisor*: Prof. Angelos Keromytis
- February 2013 **M.Phil. in Computer Science**, *Columbia University*, Department of Computer Science, Graduate School of Arts and Sciences, New York, NY, USA.
- May 2010 **M.S. in Computer Science**, *Columbia University*, Department of Computer Science, Fu Foundation School of Engineering and Applied Science, New York, NY, USA.  
**GPA**: 4.1/4
- June 2006 **B.S. in Computer Science**, *Athens University of Economics and Business*, Department of Informatics, Athens, Greece.  
**GPA**: 8.76/10 (ranked 1<sup>st</sup> among 177 students; top 1%)

## Honors and Awards

- November 2014 **1<sup>st</sup> place winner**, Applied Security Research Paper award (for `ret2dir` [C.2]), Cyber Security Awareness Week (CSAW), NYU Polytechnic School of Engineering
- November 2012 **Finalist** (top 10), AT&T Applied Security Research Paper award (for `kGuard` [C.8]), Cyber Security Awareness Week (CSAW), NYU Polytechnic School of Engineering
- June 2012 **Scholarship** (for Ph.D. studies), Gerondelis Foundation
- July 2007 **Ericsson Award of Excellence in Telecommunications** (for B.S. thesis), Ericsson Hellas
- December 2006 **Valedictorian**, Athens University of Economics and Business, Department of Informatics
- June 2006 Graduated **Summa Cum Laude**, Athens University of Economics and Business, Department of Informatics
- May 2005 **Semifinalist**, worldwide IEEE Computer Society International Design Competition

## Research Experience

2008–present

**Research Assistant (graduate)**, *Network Security Lab*, Columbia University, (*advisor*: Prof. Angelos Keromytis).

**Kernel Protection** [J.1,C.2,C.8]. Modern OSes employ a virtual memory model that trades strong isolation for performance. I investigated the security ramifications of weak user/kernel address space separation, and designed and implemented **kGuard** [USENIX Sec '12, ;login: '12]: a system to protect Linux/BSD kernels from attacks that exploit the weak segregation of address spaces. In addition, I introduced **ret2dir** [USENIX Sec '14]: a new kernel exploitation technique that enables the complete circumvention of numerous software and hardware kernel protection mechanisms, including Intel's SMEP/SMAP and ARM's PXN processor features.

<http://www.cs.columbia.edu/~vpk/research/kguard/>

<http://www.cs.columbia.edu/~vpk/research/ret2dir/>

**High-performance Data Flow Tracking** [C.3,C.10,C.11]. Dynamic data flow tracking (DFT), also referred to as information flow tracking, deals with tagging and tracking data of interest as they propagate during program execution. I designed and implemented **libdft** [VEE '12]: a dynamic DFT framework that unlike previous work is at once fast, reusable, and works with commodity software and hardware. I explored different approaches for implementing efficient instruction-level data tracking, introduced a performant and 64-bit capable shadow memory, and identified the common pitfalls responsible for the excessive run-time overhead of similar tools. In addition, I co-developed a set of techniques to further reduce the slowdown of DFT frameworks, by combining static and dynamic analysis. **TFA** [NDSS '12] separates the program logic from tracking logic, extracts the semantics of the latter, and uses traditional compiler optimizations to eliminate redundant tracking. **ShadowReplica** [CCS '13] accelerates DFT and other shadow memory-based analyses, by completely decoupling analysis from execution and using spare CPU cores to run them in parallel.

<http://www.cs.columbia.edu/~vpk/research/libdft/>

**Software Hardening** [C.7]. Applications can be logically separated to parts that face different types of threats or suffer dissimilar exposure to a particular threat. Based on this observation, I co-developed Virtual Application Partitioning (**VAP**) [CCS '12]: a technique that allows the selective and targeted application of various protection mechanisms to different software parts. Furthermore, I introduced a methodology for automatically slicing software, using a binary monitor and an intrinsic application property (user authentication), to dynamically adapt the defences being deployed by switching between protection mechanisms like dynamic taint analysis and instruction-set randomization. <https://code.google.com/p/virtual-partitioning/>

**Cloud Auditing** [C.4,C.6]. The risk of unauthorized access to private cloud-resident data is among the primary concerns to users of cloud services. I contributed to the design and implementation of **CloudFence** [RAID '13]: a framework that allows users to independently audit the treatment of their data, by third-party services, through the intervention of the cloud provider that hosts these services. CloudFence is built on top a fine-grained DFT framework that I developed (libdft), and besides data auditing it enables service providers to confine the use of sensitive data in well-defined domains, offering protection against inadvertent leaks and unauthorized accesses.

**Anonymity Systems** [C.5]. **CellFlood** [ESORICS '13] is a DoS attack that I co-developed, against Tor onion routers, which exploits a design flaw in the way Tor software builds virtual circuits. I studied the feasibility and implications of CellFlood, and demonstrated that an attacker needs only a fraction of the resources required by a network DoS attack for achieving similar damage. Furthermore, I contributed to the design and implementation of an effective solution to the problem that relies on cryptographic client puzzles.

**System & Network Deception** [J.2,C.13,C.14,P.2]. **BotSwindler** [RAID '10] is a bait-injection system designed to delude and detect crimeware, by forcing it to reveal itself during the exploitation of monitored information. I contributed to the design and implementation of BotSwindler, which relies upon an out-of-host software agent that drives user-like interactions inside a virtual machine, seeking to convince malware residing within a guest OS that has captured legitimate credentials. In addition, I co-developed a novel trap-based architecture for enterprise networks that detects “silent” attackers who are eavesdropping on network traffic [WiSec '10, JCS '12].

- Summer 2013 **Research Assistant**, *Extreme Computing Group*, Microsoft Research, (*advisor*: Dr. Marcus Peinado).  
Design and implementation of **TypeTracer**: a debugging extension that leverages type information for triaging crash dumps. TypeTracer offers enhanced crash dump classification by utilizing static taint analysis, opportunistic reverse (concrete) execution, and a new concept that I co-developed, named type-based pointer graphs.
- Summer 2012 **Research Assistant**, *Autonomic Management Group*, NEC Laboratories America, (*advisor*: Dr. Zhichun Li).  
Worked on the **AAPL** project [C.1,P.1]. AAPL [NDSS '15] is a static analysis framework that uses data flow tracking to vet Android apps for component hijacking vulnerabilities (permission leakage, unauthorized data access, intent spoofing). I designed and developed a novel conditional tracking scheme that leverages (global) constant folding/propagation techniques for improving the accuracy and detection rate of the framework.
- Spring 2007 **Research Fellow**, *Web Information Management Group*, Athens University of Economics and Business, (*advisor*: Prof. Vasilis Vassalos).  
Architectural design and implementation of **MODS**: a secure location management system for tracking spatially distributed mobile data. Investigated the security aspects related to the mobile context, namely integrity and authenticity, and developed an efficient lightweight protocol for carrying out the proposed architecture.
- 2004–2007 **Research Assistant (undergraduate)**, *Mobile Multimedia Lab*, Athens University of Economics and Business, (*advisor*: Prof. George Polyzos).  
Worked on the Peer-to-Peer Wireless Network Confederation (**P2PWNC**) project [J.3,C.17,C.19,D.1,D.2,D.3]. P2PWNC focuses on the reciprocal provision of Internet access to mobile users through voluntary-controlled wireless access points. Implemented a Quality of Service (QoS) module [AccessNets '06] to facilitate the differentiation of the provided service, and studied the performance tradeoffs associated with various setups and architectural factors [MobiMedia '07]. <http://mm.aueb.gr/research/p2pwnc/>

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## Press and Media Coverage

### Kernel Isolation [C.2]

- 11/17/2014 **CNBC**. *World's Biggest Student Cyber Security Contests Reveal Best Young Hackers and Researchers*. <http://goo.gl/whvLXq>
- 10/17/2014 **Reddit**. *ret2dir: Deconstructing Kernel Isolation*. <http://goo.gl/wslaaQ>
- 10/17/2014 **Hacker News**. *ret2dir: Rethinking Kernel Isolation*. <http://goo.gl/ON1wyk>
- 09/09/2014 **Dark Reading**. *Black Hat Europe 2014: Gullible Computers*. <http://goo.gl/DniZ70>

## Teaching and Mentorship

### Teaching Assistant

► Created and graded homeworks, midterms, and final exams; prepared project material and gave lectures.

- Fall 2012 **COMS W4180–Network Security**, *Columbia University*.  
*Instructor*: Prof. Angelos Keromytis, *students*: 23
- Spring 2011 **COMS W4180–Network Security**, *Columbia University*.  
*Instructor*: Prof. Angelos Keromytis, *students*: 4 CVN (*remote*)
- Fall 2010 **COMS W4180–Network Security**, *Columbia University*.  
*Instructor*: Prof. Angelos Keromytis, *students*: 5 CVN (*remote*)
- Spring 2010 **COMS W4180–Network Security**, *Columbia University*.  
*Instructor*: Prof. Angelos Keromytis, *students*: 30
- Fall 2009 **COMS W4187–Security Architecture and Engineering**, *Columbia University*.  
*Instructor*: Prof. Steven Bellovin, *students*: 15

### Student Mentor

- 2014–present Marios Pomonis (junior Ph.D. student; Columbia University),  
**kR^X**: *Kernel Protection against Just-In-Time Code Reuse*.
- 2014–present Suphanee Sivakorn (junior Ph.D. student; Columbia University),  
**SSLytics**: *Analysis and Characterization of the SMTP SSL/TLS Ecosystem*.
- 2014–present Theofilos Petsios (junior Ph.D. student; Columbia University),  
**DynaGuard**: *Transparent Protection against Stack Canary Brute-force Attacks*.
- Fall 2014 João Moreira (Ph.D. student; visiting scholar from University of Campinas),  
**kCFI**: *Kernel Control-Flow Integrity*.
- Spring 2014 Pratyush Parimal (M.S. student; Columbia University),  
**LHS**: *An Empirical Study of Exploit Mitigation Techniques in Linux Distributions*.
- Fall 2013 Thomas Elling (B.S. student; Columbia University),  
**uBPF\_SECCOMP**: *Safe User-level BPF\_SECCOMP Sandboxing*.
- Spring 2013 Yibo Zhu (M.S. student; Columbia University),  
**Apache Tripwire**: *Intrusion Recovery for Web Applications*.
- 2011–2013 Marco Barbera (Ph.D. student; visiting scholar from Sapienza University of Rome),  
**CellFlood**: *Attacking Tor Onion Routers on the Cheap [C.5]*.

## Service

### Program Committees

**USENIX Sec** USENIX Security Symposium (*shadow PC*), 2014.

### External Reviewer

- NDSS** Network and Distributed System Security Symposium, 2014, 2015.
- CCS** ACM Conference on Computer and Communications Security, 2010, 2012, 2013, 2014.
- DIMVA** International Conference on Detection of Intrusions and Malware & Vulnerability Assessment, 2014.
- ISC** International Information Security Conference, 2014.
- ACSAC** Annual Computer Security Applications Conference, 2011, 2013.
- ACNS** International Conference on Applied Cryptography and Network Security, 2010, 2012, 2013.
- FC** International Conference on Financial Cryptography and Data Security, 2012, 2013.
- EuroSec** European Workshop on Systems Security, 2013.
- IWSEC** International Workshop on Security, 2010, 2013.
- CANS** International Conference on Cryptology and Network Security, 2012.
- USENIX ATC** USENIX Annual Technical Conference, 2011.
- MSWiM** ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems, 2007.
- PIMRC** IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, 2006.

### Program Chair

November 2004 1<sup>st</sup> **Debi-Day Workshop**, *Athens University of Economics and Business*, Department of Informatics, Athens, Greece.  
Hands-on introductory workshop on GNU/Linux (20 attendees)

## Talks, Lectures, Presentations

### Invited Talks

#### o **Rethinking Kernel Isolation** [C.2]

November 2014 Stevens Institute of Technology, *Host*: Georgios Portokalidis

October 2014 VU University Amsterdam, *Host*: Herbert Bos

September 2014 Georgia Institute of Technology, *Host*: Tielei Wang, Wenke Lee

#### o **Lightweight Kernel Protection against Return-to-user Attacks** [C.8]

November 2012 AT&T Security Research Center, *Host*: Baris Coskun

July 2012 NEC Laboratories America, *Host*: Zhichun Li

## Guest Lectures

- November 2014 **Kernel Security: Attacks and Defenses**  
Secure Systems (CS576), *Stevens Institute of Technology*.  
*Instructor:* Georgios Portokalidis
- October 2014 **Kernel Security: Building Trustworthy OSES**  
Reliable Software (E6121), *Columbia University*.  
*Instructor:* Junfeng Yang
- April 2010 **Packet Filters: Proposed Solutions and Current Trends**  
Network Systems Design and Implementation (W6998), *Columbia University*.  
*Instructor:* Erich Nahum
- May 2009 **Securing Networked Applications: The Role of Program Structure**  
Network Security, *Athens University of Economics and Business*.  
*Instructor:* Elias Efstathiou, Thanasis Papaioannou

## Conference Presentations

- October 2014 **ret2dir: Deconstructing Kernel Isolation**  
Black Hat Europe (BHEU), Amsterdam, Netherlands.
- August 2014 **ret2dir: Rethinking Kernel Isolation**  
USENIX Security Symposium (USENIX Sec), San Diego, CA, USA.  
[Video: <http://goo.gl/Cxdz7C>, Audio: <http://goo.gl/ab3vIJ>]
- August 2012 **kGuard: Lightweight Kernel Protection against Return-to-user Attacks**  
USENIX Security Symposium (USENIX Sec), Bellevue, WA, USA.  
[Video: <http://goo.gl/y3rvHK>, Audio: <http://goo.gl/JM2cgh>]
- March 2012 **libdft: Practical Dynamic Data Flow Tracking for Commodity Systems**  
International Conference on Virtual Execution Environments (VEE), London, UK.

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## Professional Appointments

- Summer 2014 **Software Engineer**, *Oracle America Inc.*, Santa Clara, CA, USA.  
Member of the Solaris Core Kernel team. *Tasks included:* patching the kernel of Oracle Solaris to add support for full Address Space Layout Randomization (ASLR), modifying the build environment for compiling the OS/Net userland binaries as position-independent (PIE), and evaluating the performance overhead of position-independent code (PIC).
- 2007–2008 **Software Engineer**, *MySapient Ltd.*, Athens, Greece.  
Participated in the design and development of a massively multiplayer online game (MMOG) and a social network. *Tasks included:* designing, and implementing in C++, a set of client-side networking libraries, as well as a networked game server using a distributed and scalable architecture.
- 2005–2007 **Student Consultant**, *Microsoft Hellas*, Athens, Greece.  
Member of Developers Platform Evangelists (DPE) group. *Tasks included:* administering the departmental Microsoft Developer Network Academic Alliance (MSDNAA) subscription, organizing technical presentations (for students) involving Microsoft products, advising students entering Microsoft's worldwide "Imagine Cup" programming contest, and setting up and moderating the studentguru.gr community website. <http://www.studentguru.gr>

2004–2005 **Chief System Administrator**, *Computer Science Lab*, Athens University of Economics and Business, Athens, Greece.  
Daily administration and maintenance of 40 workstations for supporting the needs of the offered courses. *Tasks included*: administering the laboratory's domain, file, and print server, administering the departmental web and email server, administering the local wireless network, and authoring a QoS management software to support multiple user and service classes.

## Patents

- [P.1] G. Jiang, **V. P. Kemerlis**, Z. Li, K. Lu, Z. Wu, and Z. Qian.  
DuLeak: A Scalable App Engine for High-Impact Privacy Leaks (*patent pending*).
- [P.2] B. M. Bowen, P. V. Prabhu, **V. P. Kemerlis**, S. Sidiroglou, S. J. Stolfo,  
and A. D. Keromytis. Methods, systems, and media for detecting covert malware.  
U.S. Patent Number 8,528,091. Filed: Dec 31, 2010. Issued: Sep 3, 2013.

## Refereed Publications

### Conference Proceedings

- [C.1] K. Lu, Z. Li, **V. P. Kemerlis**, Z. Wu, L. Lu, C. Zheng, Z. Qian, W. Lee, and G. Jiang. Checking More and Alerting Less: Detecting Privacy Leakages via Enhanced Data-flow Analysis and Peer Voting. In *Proceedings of the 22nd ISOC Symposium on Network and Distributed System Security (NDSS)*, San Diego, CA, USA, February 2015 (*to appear*). [Acceptance rate: 16.9%]
- [C.2] **V. P. Kemerlis**, M. Polychronakis, and A. D. Keromytis. ret2dir: Rethinking Kernel Isolation. In *Proceedings of the 23rd USENIX Security Symposium (USENIX Sec)*, San Diego, CA, USA, August 2014. [Acceptance rate: 19%]
- [C.3] K. Jee, **V. P. Kemerlis**, A. D. Keromytis, and G. Portokalidis. ShadowReplica: Efficient Parallelization of Dynamic Data Flow Tracking. In *Proceedings of the 20th ACM Computer and Communications Security Conference (CCS)*, Berlin, Germany, October 2013. [Acceptance rate: 19.8%]
- [C.4] V. Pappas, **V. P. Kemerlis**, A. Zavou, M. Polychronakis, and A. D. Keromytis. CloudFence: Data Flow Tracking as a Cloud Service. In *Proceedings of the 16th International Symposium on Research in Attacks, Intrusions and Defenses (RAID)*, Saint Lucia, October 2013. [Acceptance rate: 23.1%]
- [C.5] M. V. Barbera, **V. P. Kemerlis**, V. Pappas, and A. D. Keromytis. CellFlood: Attacking Tor Onion Routers on the Cheap. In *Proceedings of the 18th European Symposium on Research in Computer Security (ESORICS)*, Egham, UK, September 2013. [Acceptance rate: 17.8%]
- [C.6] A. Zavou, V. Pappas, **V. P. Kemerlis**, M. Polychronakis, G. Portokalidis, and A. D. Keromytis. Cloudopsy: an Autopsy of Data Flows in the Cloud. In *Proceedings of the 15th International Conference on Human-Computer Interaction (HCI)*, Las Vegas, NV, USA, July 2013.

- [C.7] D. Geneiatakis, G. Portokalidis, **V. P. Kemerlis**, and A. D. Keromytis. Adaptive Defenses for Commodity Software through Virtual Application Partitioning. In *Proceedings of the 19th ACM Computer and Communications Security Conference (CCS)*, Raleigh, NC, USA, October 2012. [Acceptance rate: 18.9%]
- [C.8] **V. P. Kemerlis**, G. Portokalidis, and A. D. Keromytis. kGuard: Lightweight Kernel Protection against Return-to-user Attacks. In *Proceedings of the 21st USENIX Security Symposium (USENIX Sec)*, Bellevue, WA, USA, August 2012. [Acceptance rate: 19.4%]
- [C.9] E. Athanasopoulos, **V. P. Kemerlis**, M. Polychronakis, and E. P. Markatos. ARC: Protecting against HTTP Parameter Pollution Attacks Using Application Request Caches. In *Proceedings of the 10th International Conference on Applied Cryptography and Network Security (ACNS)*, Singapore, June 2012. [Acceptance rate: 17.2%]
- [C.10] **V. P. Kemerlis**, G. Portokalidis, K. Jee, and A. D. Keromytis. libdft: Practical Dynamic Data Flow Tracking for Commodity Systems. In *Proceedings of the 8th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments (VEE)*, London, UK, March 2012.
- [C.11] K. Jee, G. Portokalidis, **V. P. Kemerlis**, S. Ghosh, D. I. August, and A. D. Keromytis. A General Approach for Efficiently Accelerating Software-based Dynamic Data Flow Tracking on Commodity Hardware. In *Proceedings of the 19th Network and Distributed System Security (NDSS) Symposium*, San Diego, CA, USA, February 2012. [Acceptance rate: 18%]
- [C.12] **V. P. Kemerlis**, V. Pappas, G. Portokalidis, and A. D. Keromytis. iLeak: A Lightweight System for Detecting Inadvertent Information Leaks. In *Proceedings of the 6th European Conference on Computer Network Defense (EC2ND)*, Berlin, Germany, October 2010.
- [C.13] B. M. Bowen, P. Prabhu, **V. P. Kemerlis**, S. Sidiroglou, A. D. Keromytis, and S. J. Stolfo. BotSwindler: Tamper Resistant Injection of Believable Decoys in VM-Based Hosts for Crimeware Detection. In *Proceedings of the 13th International Symposium on Recent Advances in Intrusion Detection (RAID)*, Ottawa, Canada, September 2010. [Acceptance rate: 23%]
- [C.14] B. M. Bowen, **V. P. Kemerlis**, P. Prabhu, A. D. Keromytis, and S. J. Stolfo. Automating the Injection of Believable Decoys to Detect Snooping. In *Proceedings of the 3rd ACM Conference on Wireless Network Security (WiSec)*, Hoboken, NJ, USA, March 2010 (*short paper*).
- [C.15] K. Katsaros, **V. P. Kemerlis**, C. Stais, and G. Xylomenos. A BitTorrent Module for the OMNeT++ Simulator. In *Proceedings of the 17th IEEE/ACM International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, London, UK, September 2009.



- [C.16] A. Kosmopoulos, I. Karamichali, **V. P. Kemerlis**, and G. C. Polyzos. Fueling Game Development in Mobile P2P Environments. In *Proceedings of the 18th IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)*, Athens, Greece, September 2007.
- [C.17] P. A. Frangoudis, **V. P. Kemerlis**, D. C. Paraskevaïdis, E. C. Efstathiou, and G. C. Polyzos. Experimental Evaluation of Community-Based WLAN Voice and Data Services. In *Proceedings of the 3rd International Mobile Multimedia Communications Conference (MobiMedia)*, Nafpaktos, Greece, August 2007.
- [C.18] E. G. Giannopoulou, **V. P. Kemerlis**, M. Polemis, J. Papaparaskevas, A. C. Vatopoulos, and M. Vazirgiannis. A Large Scale Data Mining Approach to Antibiotic Resistance Surveillance. In *Proceedings of the 20th IEEE International Symposium on Computer-Based Medical Systems (CBMS)*, Maribor, Slovenia, June 2007.
- [C.19] E. C. Efstathiou, F. A. Elianos, P. A. Frangoudis, **V. P. Kemerlis**, D. C. Paraskevaïdis, E. C. Stefanis, and G. C. Polyzos. Public Infrastructures for Internet Access in Metropolitan Areas. In *Proceedings of the 1st International Conference on Access Networks (AccessNets)*, Athens, Greece, September 2006 (invited paper).
- [C.20] **V. P. Kemerlis**, E. C. Stefanis, G. Xylomenos, and G. C. Polyzos. Throughput Unfairness in TCP over WiFi. In *Proceedings of the 3rd IFIP Conference on Wireless On Demand Network Systems and Services (WONS)*, Les Mènuïres, France, January 2006.

### Journal

- [J.1] **V. P. Kemerlis**, G. Portokalidis, E. Athanasopoulos, and A. D. Keromytis. kGuard: Lightweight Kernel Protection. *USENIX ;login: Magazine*, 37(6), December 2012.
- [J.2] B. M. Bowen, **V. P. Kemerlis**, P. Prabhu, A. D. Keromytis, and S. J. Stolfo. A System for Generating and Injecting Indistinguishable Network Decoys. *Journal of Computer Security (JCS)*, 20(2-3), January 2012.
- [J.3] P. A. Frangoudis, G. C. Polyzos, and **V. P. Kemerlis**. Wireless Community Networks: An Alternative Approach for Broadband Nomadic Network Access. *IEEE Communications Magazine*, 49(5), May 2011.

### Workshop Proceedings

- [W.1] G. Xylomenos, K. Katsaros, and **V. P. Kemerlis**. Peer Assisted Content Distribution over Router Assisted Overlay Multicast. In *Proceedings of the 1st Euro-NF Workshop on Future Internet Architecture (FIA)*, Paris, France, November 2008.

## Demo

- [D.1] E. C. Efstathiou, F. A. Elianos, P. A. Frangoudis, **V. P. Kemerlis**, D. C. Paraskevidis, G. C. Polyzos, and E. C. Stefanis. Practical Incentive Techniques for Wireless Community Networks. In *International Conference on Mobile Systems, Applications, and Services (MobiSys)*, Uppsala, Sweden, June 2006.
- [D.2] E. C. Efstathiou, F. A. Elianos, P. A. Frangoudis, **V. P. Kemerlis**, D. C. Paraskevidis, G. C. Polyzos, and E. C. Stefanis. The Peer-to-Peer Wireless Network Confederation Scheme. In *International Conference on Computer Communications (INFOCOM)*, Barcelona, Spain, April 2006.
- [D.3] E. C. Efstathiou, F. A. Elianos, P. A. Frangoudis, **V. P. Kemerlis**, D. C. Paraskevidis, G. C. Polyzos, and E. C. Stefanis. The Peer-to-Peer Wireless Network Confederation Scheme: Protocols, Algorithms, and Services. In *International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom)*, Barcelona, Spain, March 2006.