Cyber Security Research at Jordan University of Science & Technology- An Overview

Basheer Al-Duwairi

Jordan University of Science & Technology

- Assistant Professor Department of Network Engineering & Security @ JUST

- Education:
  - PhD, Iowa State University, 2005
  - Ms, Iowa State University, 2002
  - BSc, Jordan University of Science & Technology

- Research interests
  - Network security
  - DDoS attacks
  - Botnets
  - Cloud security

Jordan University of Science & Technology (JUST)

Established	1986
Type	Public
Students	25,000
International	5,000
Location	Al-Ramtha, Jordan
Campus Area	Urban 11 square Kilometers
Faculty members	850
Colleges	10

Faculty of Agriculture	Faculty of Applied Medical Sciences	Faculty of Computer and Information Technology	Faculty of Dentistry	Faculty of Engineering	Faculty of Medicine	Faculty of Nursing	Faculty of Pharmacy	Faculty of Science and Arts	Faculty of Veterinary Medicine
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United-States/Middle-East Workshop On Trustworthiness in Emerging Distributed Systems and Networks, Istanbul- Turkey, 4-6 June 2012

Computer & Information Technology Departments & Programs

Department	Programs
Computer Engineering (CPE)	BSc, MS
Network Engineering & Security (NES)	BSc
Computer Science (CS)	BSc, MS
Computer & Information Systems (CIS)	BSc
Software Engineering (SE)	BSc
Service Science Management & Engineering (SSME) (under construction jointly with IBM).	BSc
Total # students	1500
# Faculty members	50

- Network Engineering & Security Department
- Established in 2009
- 11 Faculty members
- 350 Students
- Rich curriculum
  - Computers Networks (4 courses)
  - Computer & Network Security (3 courses)
  - Wireless Networking (2 courses)
  - Multimedia systems (2 courses)
  - Advanced topics (3 elective courses)

Cyber Security Research Group

Basheer Al-Duwairi

- DDoS attacks, mitigation and traceback
- Botnets
- Smartphone security
- Cloud Security

Ahmad Al-Hammouri

- Cyber-Physical Systems (also known as Networked Control Systems),
- Smart power grid,

Monther Al-Duwairi

- hardware algorithms and architectures for network processing and security
- Intrusion detection systems

Graduate students & Research Assistants

- 7 Ms students
- 4 research assistants

Ongoing Research Projects- DDoS Attacks

- Developing techniques to provide DDoS protection service

  - Zakaria Al-Qudah, Basheer Al-Duwairi, and Osama Al-Khaleel, "DDoS Protection as a Service: Hiding Behind the Giants", To appear in International Journal of Computational Science and Engineering

  - B. Al-Duwairi and Abdul-Raheem Mustafa, "Request diversion: a novel mechanism to counter P2P-based DDoS attacks", In Proc. Int. J. Internet Protocol Technology. Vol. 5, Nos. 1/2, 2010

  - B. Al-Duwairi and G. Manimaran, "JUST-Google: A search engine based defense against botnet-based DDoS attacks,". In Proc. IEEE ICC 2009, Dersen, Germany.

- Collaboration project with a team from TU Berlin, Summer 2012

Ongoing Research Projects -Botnets

- Fast Flux Characterization and Detection

- Smartphone Botnets

    – Detection algorithms for SMS-based mobile botnets

    – New designs (centralized, P2P, Hybrid)

- Botnet Detection

    – B. Al-Duwairi and Lina Al-Ibbini, "BotDigger: Autonomous and Intelligent Botnet Detector". In Proc. of the 5th International Conference for Internet Monitoring and Protection (ICIMP 2010), Barcelona, Spain.

- Email spam detection

  - Omar Al-Jarrah, Ismail Khater, and Basheer Al-Duwairi, "Identifying Potentially useful header features for email spam filtering". In Proc. of the Sixth International Conference on Digital Society (ICDS 2012), Valencia, Spain, Feb. 2012.

  - B. Al-Duwairi, Ismail Khater, and Omar Al-Jarrah, "Texture Analysis Based Image Spam Filtering". In Proc. the 6th International Conference for Internet Technology and Secured Transactions (ICITST-2011), Abu Dhabi, Dec. 2011.

- ConTest: A GUI-Based Tool to Manage Internet-Scale Experiments over PlanetLab

- SOA Based Migration of JUST Enterprise Systems to the Cloud

Thank You !