Ram B. Basnet, Ph.D.

EDUCATION

New Mexico Tech, Socorro, New Mexico
Ph.D. in Computer Science, 5/2010 – 1/2012, Area of Specialization: Phishing Detection
M.S. in Computer Science, 8/2005 – 12/2007

Colorado Mesa University, Grand Junction, Colorado, 8/2001 – 5/2004
B.S. in Computer Science and Minor in Mathematics, *summa kum laude*

RESEARCH EXPERIENCE

Graduate Research Associate: 5/2010 – 12/2011, Institute for Complex Additive Systems Analysis (ICASA), New Mexico Tech, (research adviser: Dr. Andrew H. Sung), Socorro, New Mexico.
- Designed and developed systems using machine learning techniques and rule-based expert system to counter phishing attacks by detecting phishing emails, phishing URLs, and phishing webpages.
- Contributed in writing research proposals to apply for grants.
- Published research and findings in peer-reviewed conferences and journals.

Research Scientist II: 1/2008 – 4/2010, ICASA, New Mexico Tech, Albuquerque, New Mexico.
Researcher and lead developer on CACTUS (Computational Analysis of Cyber Terrorism against the United States), $1,000,000 project funded by federal grant; focused on research and development in text and Web mining; collaborated and integrated software modules in Natural Language Processing developed by Computing Research Laboratory (crl.nmsu.edu) at New Mexico State University.
- Directed innovative design and development of a scalable information gathering, retrieval, and visualization framework.
- Supervised graduate students and interns on various projects such as network security and forensics, machine learning, data mining, client and compliance management systems, application security, etc.
- Identified and demonstrated XSS and SQL Injection vulnerabilities on New Mexico Legislator website when it was compromised during the 2008 session; reviewed and fixed the source codes written in ASP and JSP and brought the site back online in 4 days.
- Designed and developed an application called Tweezer to gather, analyze (sentiment analysis), and present results on tweets from Twitter using Django (MVC) framework.

- Developed teaching materials (http://code.google.com/p/owasp-top-10/) and provided hands-on trainings on Top 25 Most Dangerous Programming Errors and OWASP Top 10 Errors to developers from New Mexico State departments and BudgeText Corp. (www.budgetext.com).
- Performed information security posture assessment for various New Mexico state agencies such as taxation and revenue, judicial information systems, legislative council service, corrections department, etc. and private businesses.

Graduate Research Assistant: 8/2005 – 12/2007, ICASA, New Mexico Tech, Socorro, New Mexico.
- Performed research and development in network and web application security.
- As a founding member of the "Strike Team", participated in network security posture assessment of various government agencies and private firms.
- Participated in full software development life cycle including requirements definition, prototyping, designing, interface implementation, testing and maintenance using agile software development methodology.
- Analyzed and used several commercial and open-source network security and digital forensic software tools.

PUBLICATIONS

- **R. B. Basnet** (2012), "Detecting Phishing Attacks: a Comprehensive Approach," *Ph.D. Dissertation*, New Mexico Tech.
- **R. B. Basnet**, A. H. Sung, Q. Liu, and D. Ackley, "Learning to Detect Phishing URLs," *Information Sciences*, under review.
- **R. B. Basnet** and Andrew H. Sung (2012), "Mining Web to Detect Phishing URLs," *11th International Conference on Machine Learning and Application (ICMLA), 2012.*
- **R. B. Basnet**, A. H. Sung, and Q. Liu (2012), "Feature Selection for Improved Phishing Detection," *Data Mining and Computational Intelligence for Digital Forensics and Information Assurance (IEA/AIE 2012)*.
- **R. B. Basnet**, A. H. Sung, and Q. Liu (2011), "Rule-Based Phishing Attack Detection," *Proc. of International Conference on Security and Management*, pp. 624-630.
- **R. B. Basnet** and A. H. Sung (2010), "Classifying Phishing Emails Using Confidence-Weighted Linear Classifiers," *Proc. of International Conference on Information Security and Artificial Intelligence,* pp. 108-112.
- G. J. Torres, **R. B. Basnet**, A. H. Sung, and S. Mukkamala (2009), "A Similarity Measure for Clustering and its Applications," *International Journal of Electrical and Electronic Engineering*, pp.164-170.
- **R. B. Basnet** and S. Mukkamala (2009), "Event Detection and Localization Using Sensor Networks," *Proc. of International Conference on Wireless Networks*, pp. 103-108.
- M. K. Shankarapani, **R. B. Basnet**, S. Mukkamala, A. H. Sung, and B. M. Ribeiro (2008), "Translation Based Arabic Text Categorization," *Proc. of 2nd International Conference on Information Systems Technology and Management*.

- **R. B. Basnet**, S. Mukkamala, and A. H. Sung (2008), "Detection of Phishing Attacks: A Machine Learning Approach," *Studies in Fuzziness and Soft Computing*, Springer, pp. 373-383.
- S. Mukkamala, K. Yendrapalli, **R. B. Basnet**, and A. H. Sung (2007), "Detecting Coordinated Distributed Multiple Attacks," *Proc. of 21st International Conference on Advanced Information Networking and Applications*, pp. 557-562.
- S. Mukkamala, K. Yendrapalli, **R. B. Basnet**, M. K. Shankarpani, and A. H. Sung (2007), "Detection of Virtual Environments and Low Interaction Honeypots," *Proc. of Information Assurance and Security Workshop, IEEE SMC*, pp. 92-98.
- **R. B. Basnet**, K. Yandrapali, T. Dolek, and S. Mukkamala (2007), "Knowledge Based Discovery of Phishing Attacks," IICAI, 2007.
- S. Mukkamala, A. H. Sung, K. Yendrapalli, **R. B. Basnet** (2007), "Biased Support Vector Machine and Kernel Methods for Tumor Classification," Rocky Mountain Bioinformatics Conference, Aspen, CO, 2007.
- **R. B. Basnet,** G. Torres, A. H. Sung, S. Mukkamala, B. Ribeiro (2008), "Translation Based Foreign Language Text Categorization," unpublished (https://cs.nmt.edu/~rbasnet/research/TBTC.pdf).

INDUSTRY EXPERIENCE

Chief Technology Officer: 4/2012 – 6/2013, Sage Technology Partners, Inc. Albuquerque, New Mexico.
- Lead R&D and consulting efforts in cyber security services especially in network and web application security.
- Performed network and application security assessment and penetration testing for various private and government entities.
- Developed custom applications for clients.
- Lead the effort in developing various in-house software tools and applications.
- Provided cyber security awareness training to clients.
- Evaluated and implemented various security and IT products for managed services.
- Revamped corporate web presence; developed marketing strategy using social media.

Software Developer: 9/2004 – 8/2005, Flow-Data, Inc., Grand Junction, Colorado.
- Designed and developed desktop and web applications in VB6 and ASP.NET.
- Designed and maintained company's website.

Freelance Web Developer: 5/2004 – 8/2006.
- Developed and maintained e-commerce website for Black Canyon Foods, LLC using ASP.NET.

Network Administrator: Killian & Davis, P.C., 7/2004 – 7/2005, Grand Junction, Colorado.
- Provided IT support, maintained systems and network, designed and maintained databases and website, designed ads, etc.

Computer Lab Technician: 8/2001 – 5/2004, Colorado Mesa University, Grand Junction, Colorado.
- Provided computer lab help desk support; fixed and setup computers, printers, and network devices, etc.

TEACHING INTERESTS

- Data Structures and Algorithms
- Software Engineering and Secure Software Development
- Information Assurance
- Digital Forensics
- Database and Security
- Programming Languages
- Secure Web Application Development

RESEARCH INTERESTS

- Phishing detection, data mining and machine learning
- Information assurance, risk management, network security, digital forensics, web application security, web-based malware, steganalysis, intrusion detection and prevention, etc.

PROJECTS

- EVENT (Enterprise Vulnerability Exploration & Network Topology) - consolidates network vulnerability assessment reports from industry best scanners and generates prioritized custom reports for all levels of IT staff. Provides a unified GUI framework for popular network security scanners (Nmap, Amap, and Nessus Client). The framework also contains exploit module.
- MAKE2 (Media Analysis Knowledge Extraction & Exploration) - a compressive digital forensic toolkit. Major features include: disk imaging, file system exploration, MAC time visualization, full-text indexing and searching, email graph visualization, image search and visualization, hex viewer, etc. **CAaNES (http://www.caanes.com/), a cyber security company in Albuquerque NM, offered to buy EVENT and MAKE2.**
- ARIN WhoisRWS API Wrapper - http://code.google.com/p/pywhoisapi/.
- Python API for longurl.org - http://code.google.com/p/pylongurl/.
- Hands-on learning materials on OWASP Top 10 and Top 25 Most Dangerous Programming Errors for asp.net developers - http://code.google.com/p/owasp-top-10/.

PROFESSIONAL SERVICES

- Reviewer: Elsevier - Computers and Security (*2011 – Present*)
- Program committee: Data Mining and Computational Intelligence for Digital Forensics and Information Assurance (*IEA/AIE 2012*)

TECHNICAL SKILLS

- Python, C#, JAVA, C++, VB, C, Matlab, Perl
- ASP.NET, PHP, JSP, ASP, HTML, XML, CSS, JavaScript, Silverlight, MVC
- MySQL, MSSQL, Sqlite, MS Access, OOP/OOD (UML, Design Patterns), GUI Design, Web Services, etc.
- Nessus, LANGuard, SPI Dynamics, Retina, XScan, Nmap, Amap, Metasploit, Canvas, Qualys, Acunetix, WebInspect, Nikto, Wireshark, pyflag, dd, The Sleuth Kit, COFEE, EnCase, FTK, etc.

AWARDS & HONORS

- The Dean's List, 2006 – 2007
- The Chancellor's List, 2005 – 2006
- The President's List, 2001 – 2004
- Kappa Mu Epsilon and Upsilon Pi Epsilon, 2003
- Rim Rock International Scholarship, 2001 – 2004
- Wayne Aspinall Foundation Science Scholarship, 2003 – 2004
- Mesa State College Foundation - Bacon Family Scholarship, 2002 – 2004
- Outstanding Student of the Batch (Little Angels' College, Nepal), 1997 – 1999
- Best All Rounder (Little Angels' School, Nepal), 1997