Wayne Morrison	wayne@waynemorrison.com	www.linkedin.com/in/morrisonwg
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Computer and network security systems expert with 20+ years of experience as a developer and trust engineer at security research and consulting companies. Extensive background in software development, security analysis, and developing new tools and technologies. Experienced with projects consisting of government-sponsored research, consulting, product development, and internally funded research.

CORE PROFESSIONAL STRENGTHS

- Python
- Perl
- K&R C
- Unix C shell scripts
- Unix programming

- ssZeek and Bro plugins
- Wireshark and Tshark plugins (Lua)
- Elasticsearch
- Virtualbox

SOME EXPERIENCE

- Unix Bash shell scripts
- Git
- Kibana
- Test-Driven Development

- Django
- Perl/k
- Nagios and Zabbix monitoring systems

Completed the Machine Learning course on Coursera.org in June, 2021.
Working on the Deep Learning specialization on Coursera.org (2 of 5 courses completed; 3rd in progress.)

EMPLOYMENT HIGHLIGHTS

Parsons	June 2003 - Sept 2021
Senior Software Engineer and Principal Research Scientist	Columbia, MD

Worked on a variety of projects and tasks in security research, development, analysis, and consulting, including:

- Global Analysis of Weak Signals for Enterprise Event Detection (GAWSEED)
  GAWSEED examined protocol attacks and network risk for early warning of network attacks.
  Developed tools in Python to find trends in attack traffic to honeypots; also used Elasticsearch and Kafka.
  Wrote plugins to analyze network traffic to find linked protocol use (DNS, NTP, SMTP) by attackers.
  Plugins were for the Wireshark/Tshark (written in Lua) and the Bro/Zeek network analyzers (written in a language specific to those tools.)

- Internet Risk Assessment and Mediation (I-RAM)
  I-RAM supported risk analysis and management to give enterprises a full view of the risk from dependence on the Internet infrastructure for critical services.
  Developed tools for determining geospatial risks for use in the I-RAM interface.
  Tools were written in Python and made use of Elasticsearch and Django.

- DNSSEC-Tools
  This project provided new tools, documentation, and guidance for adopting DNSSEC.
  Developed numerous tools for managing DNSSEC-signed zones and keys. Key management was automated and simplified, leading to significantly easier use of DNSSEC. Also wrote monitoring interfaces for Nagios, Zabbix, and Perl/Tk. These tools are included in the open-source DNSSEC-Tools package.

- User Experience Monitor (UEM)
  UEM monitored DNS responsive times to detect DNS outages and attacks as they occurred.
  Designed and developed the UEM monitoring software to track distributed DNS responsiveness. Also wrote monitoring interfaces for Nagios and Zabbix. These tools were written in Perl and are included in the owl-monitor portion of the open-source DNSSEC-Tools package.

- Ensuring and Accelerating Routing Security (EARS)
  EARS expanded routing security through RPKI and BGPSEC deployment-tool development and education.
  Designed and developed tools to validate rpki.net configuration files to prevent misconfiguration errors.
  Updated and re-wrote a step-by-step guide for the rpki.net software.
  Tools were written in Python.

- Domain Type Enforcement Firewalls (DTEFW)
  DTEFW added strong type checking to firewall-protected network traffic.
  Wrote NFS firewall proxy for the DTE system and added DTE features to BSD/OS. Made group leader's job easier by writing an architecture and project reports and managing development for project phases 2 and 3.
  Work was done in K&R C.

Open-Source Software Projects

DNSSEC-Tools   https://github.com/DNSSEC-Tools/DNSSEC-Tools
                    https://github.com/DNSSEC-Tools/DNSSEC-Tools/tree/master/dnssec-tools/tools/scripts
                    https://github.com/DNSSEC-Tools/DNSSEC-Tools/tree/master/dnssec-tools/apps/nagios
                    https://github.com/DNSSEC-Tools/DNSSEC-Tools/tree/master/dnssec-tools/apps/zabbix
                    https://github.com/DNSSEC-Tools/DNSSEC-Tools/tree/master/dnssec-tools/apps/owl-monitor

GAWSEED   https://github.com/gawseed
                   https://github.com/gawseed/wireshark_plugins
                   https://github.com/gawseed/zeek_tools
                   https://github.com/gawseed/elasticsearch_tools

Secure Routing   http://www.securerouting.net
                   https://github.com/securerouting/config-checks
                   http://www.securerouting.net/sbs-guide/

Personal Open-Source Software Projects

https://waynemorrison.com/software

PUBLICATIONS
Sandra Murphy, Abhijit Hayatnagarkar, Suresh Krishnaswamy, Wayne Morrison, and Robert Watson, "Code Revocation for Active Networks," in Proceedings of the IEEE OpenArch Conference, San Francisco, CA, April 2003

Mike Petkac, Lee Badger, and Wayne Morrison, "Security Agility for Dynamic Execution Environments," in Proceedings of the DARPA Information Survivability Conference and Exposition, Hilton Head, SC, January 2000.

Karen Oostendorp, Lee Badger, Christopher Vance, Wayne Morrison, Michael Petkac, and Dave Sherman, "Domain and Type Enforcement Firewalls," in Proceedings of the Computer Security Applications Conference, San Diego, CA, December 1997.
In December 2020, ACSAC gave this paper its "Test of Time" award for long-term relevance.

EDUCATION
B.S., Computer Science, University of Maryland, College Park