**ROBERT DAHLBERG**

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**Summary**

Excellent analytic skills in assessing problems and designing elegant solutions. Work in a collaborative team. Strong technical background in IT infrastructure, software development, system internals and diagnostics. Innovative, forward-thinking practical thinker. Lead using a shared leadership approach and mentoring. Proficient in agile processes. Currently, finding and working with industrial partners to sponsor students to collaborate and apply practical solutions to industry issues.

In-depth knowledge and experience in Cyber security, access control, Intrusion Detection, Forensics, Risk Assessments, FISMA, Security policy, and system lifecycle. Proficient in assembler, C, C++, JAVA, Visual Basic, and various scripting languages. Skilled in design techniques, such as object-oriented (OOD), service-oriented architecture (SOA) and stack patterns.

**PROFESSIONAL EXPERIENCE**

**Makecents, INC.**, New York, NY **2018 - Present**

**Technical Advisor**

Independent research group formed into a start-up S-Corp to produce blockchain solutions. Developing an Access Control Blockchain (ACB) to facilitate anonymous data ownership. The ACB can be applied to healthcare records and voting system. Partnered with investors to provide development services for other software start-up ventures under NDA.

**MainCHAINS, INC.**, Richmond, VA **2015 - Present**

**CEO**

Independent research group formed into a start-up S-Corp to produce blockchain solutions. Developing an Access Control Blockchain (ACB) to facilitate anonymous data ownership. The ACB can be applied to healthcare records and voting system. Partnered with investors to provide development services for other software start-up ventures under NDA.

**Assistant Professor,** Computer Science Department, School of Engineering **2017 to present**

* Open Mainframe Project Linux Foundation –
	+ VCU represtative as member of the steering committee
	+ VCU represtative as member of the Governing Board
	+ International Internship Coordinator
* Virginia CyberSecurity Partnership – VCU representative
* NSA Cybersecuity Center of Excellence committee member for VCU Computer Science department
* Computer Science Department School of Engineering – Courses taught:
	+ **CMSC 255** – Introduction to Programming – (Fall-2017) Beginning programming with JAVA. Using Processed Oriented Guided Inquirey Learning (POGIL) as part of NFS grant.
* **CMCS 451/452** – Senior Design – .(Fall-2015, Spring- 2016, Fall-2016, Spring-2017, Fall-2017) Capstone coordinator for Computer Science outreach program. Over last 2 years, mentored 110 students making up 38 industry-sponsored IT project teams, helping students to develop solutions. Directed design, prototypes, and final presentations with industry sponsors.
	+ **CMSC 257** – Computer Systems – Linux systems programming. Run 2 Labs teaching and mentoring students in the use of Linux commands and C programming.

**VIRGINIA** **COMMONWEALTH UNIVERSITY**, Richmond, VA **2012 - 2017**

**Part time Adjunct Professor,** Computer Science Department, School of Engineering and Information Systems Department, School of Business

* Computer Science Department School of Engineering – Courses taught:
	+ **CMSC 355** – Software Engineering – (Spring-2012, Fall-2012, Spring-2013, Fall-2013, Spring-2014, Summer-2014)Software and Infrastructure Design – UML, DFD, SOA, OOD, ER Models

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* + **CMSC 420** – Software Engineering – (Spring-2013, Spring-2014) Software Development Lifecycle – Agile development, project management, Requirements Engineering, testing, code management, and DEVOPS lifecycle.
* **CMCS 451/452** – Senior Design – .(Fall-2015, Spring- 2016, Fall-2016, Spring-2017) Capstone coordinator for Computer Science outreach program. Over last 2 years, mentored 110 students making up 38 industry-sponsored IT project teams, helping students to develop solutions. Directed design, prototypes, and final presentations with industry sponsors.
* Information Systems Department, School of Business – Courses taught:
* **INFO 640** - Information Systems Management – (Fall-2016)

**FEDERAL** **RESERVE OF RICHMOND**, Richmond, VA **2002 - 2016**

**Architect - Senior Technology Advisor** (2007 - 2016)

Advised upper management in IT issues by gathering information and performing analysis to enable informed decision making. Provided upper management with technical assessment summary of each project. Accountable for technical design and architecture assurance. Worked closely with project teams, providing technical hands-on consulting and assistance to resolve issues

* Chaired Design Review Board, a large team of managers, architects and engineers reviewing over 100 designs a year for compliance and technical merit. Established standards and identified architecture gaps. Solved identified problems, saving millions a year in cost avoidance.
* Guided, architected, and designed a standard design process that established design patterns that simplified and increased efficiency of design process and national enterprise environment for Cloud (PaaS, SaaS, and IaaS.) Instrumental in architecting infrastructure design and automating of provisioning, reducing cost and time to deploy solutions by 30%.
* Developed lifecycle for managing patterns. Managed technical teams to simplify software configurations and deployment using standard configuration patterns, decreasing number of configuration patterns exponentially.
* Provided design and technical consulting to technical IT project teams. Evaluated if the project fit design standards or defined a new standard. Identified subject matters experts that required for consultation.
* LDAP clean-up and compliance reporting – Synchronized and standardized 10K user ids in Microsoft Active Directory LDAP to determine what the ids were used for and which were inactive active. Reconciled individual user ids, system ids, firecall ids, application ids, kiosk ids and batch ids, ensuring accuracy of information.

**Lead System Security Architect/Engineer** (2002 - 2007)

Responsible for and performed security risk assessments and designed security controls for national IT infrastructure projects. Functioned as security architect and design engineer or consulted on number of special projects.

* US treasury auction project: Responsible for FISMA certification for Federal Reserve – FRS representative and lead security design engineering team for US Treasury Auction infrastructure which was first FISMA certification using FIPS and SP800-53 NIST documentation (which is now standard security policy at FRS). Enforced VPN encryption for application transactions flows over the internet. Also, integrated security controls into the treasury auction infrastructure: resiliency, monitoring, network controls, authentication and authorization. Designed and implemented VPN for internal and remote management flows, using stateful firewall to authenticate user’s digital certificates, and based upon the technician’s authentication, only allow them access to the servers and software they were approved to manage. JAVA, Linux, Solaris and AIX infrastructure environment
* Check Processing project: Analyzed and designed security for Check 21 infrastructure – Designed and deployed secure process flows from customer banks to FRS internal check processing and funds transfer to recipient banks. Defined the security controls in the mediation network tier, that provided certificate authentication, monitoring and protocol breaks for all traffic. Also, obfuscated outbound URLs and domain names of internal traffic flows, as well as defined firewall rules. Worked with Sterling Commerce to define a new product for their Connect:Direct suite to provide a proxy file transfer that would create a protocol break while the payload was still in real memory – avoided storing payload on

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auxiliary storage in mediation tier. Also, enforced encryption while payload data was in transit. Linux and Windows infrastructure environment.

* Compliance tool: Directed FRS nationwide project to find standardized system configuration compliance tool for Unix, Linux, Windows and all enterprise system software. Established requirements, evaluated software, and recommended optimal solution, establishing FRS national standard tool for ensuring software compliance. Vendors found process fair and informative.
* Active Directory deployment: Managed FRS national deployment of Active Directory across all 12 FRS districts. Main responsibility was defining OU architecture and managing technicians defining security in GPOs.

**AWARE COMPUTING SERVICES, INC.,** Naperville, IL **1997 - 2002**

**President (Principle)**

Start-up cybersecurity consulting and software development S-Corporation providing services for a number of companies. Performed risk assessments and developed software for security projects. Consulting company specializing in enterprise software security and systems programming – special emphasis upon information security requirements, development and implementation. Worked in a consortium of other consultants and to supply consulting services to clients and work with vendors.

Clients:

|  |  |
| --- | --- |
| JME (John Moore Enterprises) – (Deadbolt, Inc.) | EKC, Inc |
| Federal Reserve System -- FRIT | Sempra Energy |
| Vanguard Integrity Professionals | MultiSys Computer Solutions |
| Blockade Systems | Ameritech/SBC |
| VASCO |  |

* Single Sign-on and Centralized Enterprise Access Control – Project working with Blockade Systems and the Federal Reserve created a centralized access control system for an entire enterprise network, including mainframe, Linux, Unix, Windows and websites. All sign-on and access privileges were routed to Unix System Services on the z/OS mainframe from other servers and websites via RADIUS protocols. The RADIUS calls were converted to z/OS SAF calls and processed by ACF2. Authentication calls from Unix and Linux systems were intercepted by adding code to the PAM and NSS APIs. Window authentication and authorization was intercepted by adding code to the GINA and AUTHZ APIs. Giving debugging of denied access and management of authentication and authorization easy to detect and update through native ACF2 controls.
* Two-factor authentication for mainframe – Designed and implemented a two-factor authentication using VASCO system’s tokens into a mainframe system using a system exit. Implement window’s C code into a mainframe assembler exit, enabling users to use VASCO tokens instead of a password.
* Security Policy and enforcement tool for access control – reported on current access control settings and compared them to access control policies. Ensured that security controls did not drift from policy and when they had, would rest them to policy or policy could be changed.
* Network self-service password reset – Designed and developed a password reset through a VTAM network and interfaced to native 3470 terminals.
* Firecall ID repository and distribution – Designed and developed a Firecall userid repository for highly privileged userid used to administer system daemons and tasks. These firecall ids had system high or root authority. Written in REXX scripting language, but had to create new REXX commands for encryption (ICSF), and VSAM database calls using assembler.
* VACMAN Controller – Taught VASCO VACMAN controller course to VSACO customers. Fundamentals of RADIUS for VASCO’s Digipass two-factor authentication devices. Taught customers how to modify the RADIUS protocol for various devices (both VASCO and other devices, routers and firewalls).
* Vulnerability and risk assessments – Analyzed new and existing software products for security vulnerabilities caused by either being systemic to the product or by virtue of how they were installed

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and configured. Service provided to software companies offering new products and companies using various software products.

* ACF2®/RACF®/Top Secret® mergers and conversions – Performed a number of conversions and merges for various companies.

**AWARE SERVICES, INC.,** Naperville, IL **1998 - 2002**

**Executive Vice President (Principle)**

Family owned assembly, packaging, and fulfillment C-Corporation. Responsibilities for recruiting and hiring of staff, implementing benefits, and implementing business processes.

* Developed manufacturing, inventory and distribution software and implemented into production on the internal servers and internet. Lead the technical staff in developing business systems and develop business proposals.

**GENESIS INTERNATIONAL, INC.**, 2401 Hassell Road, Hoffman Estates, IL. **1/1997 – 9/1997**

**Director of Software Development**

Start-up. Organized and managed product development, technical writing, training, technical support and quality assurance for a UNIX based product used to reformat data. Responsible for all facets of the product from design to post-sales support. Managed developers, technical writers, analysts, and technical support staff. System primarily coded in C, C++, PERL, PowerBuilder and Unix Scripts. GENIX – a GUI based protocol, and database record conversion tool. Customers were primarily telephone companies. Company sold to HP.

 **EKC, INC.**, Rosemont, IL **1994 - 1997**

**Software Development Manager/Senior Consultant**

Performed cybersecurity consulting for a number of fortune 500 companies. Completed specialized access control and security analytics projects. Architected, designed, got underwriting and developed software security products. Technical Project Manager responsible for managing, developing and culturing client

relationships and projects. Responsible for complete projects on time and under budget, along with bringing in and identifying business opportunities with clients. Main focus was to identify project opportunities in the

field that could be turned into a commercial product, get underwriting from customer, architect, and design solution. Once customer funded project, build a development team and take solution through its first release of the product. Aid other project managers in developing consulting services in new areas of computer security, and in analysis, design and development of features of consulting software tools. Manage and/or participate in consulting projects where expertise required. Involved with system programming and all product interfaces on IBM Mainframe.

Clients:

Ameritech

Swiss Bank Corporation

Federal Reserve of New York

Federal Reserve of Chicago

Federal Reserve of Richmond

Cigna

Brown University

University of Illinois

NBD Bank

Coopers Power and Electric

Wells Fargo

Bristol Myers

First Interstate

TransUnion

* Security migration software – developed software utility to aid companies running ACF2, RACF, or Top Secret access control system to convert from one to another. Software also merges multiple systems together, which is needed in acquisitions and mergers of companies. Software reduced time to perform conversions and mergers from a one year to 2 months. Performed over 150 system migrations and mergers with this software.
* Role Based Access Control (RBAC) Management System – Secured funding, designed and developed RBAC management system for users of ACF2, RACF or Top Secret. Product procures new userids, or redefines current userids to allow access to a new role. Ensures the user’s access to old role is revoked.

**COMPUTER ASSOCIATES INTERNATIONAL, INC.,** Lisle, IL **1987 - 1994**

**Senior Software Development Manager**

Managed software development teams for multiple security and audit products (ACF2, Examine, & Pan-Audit). Also principle developer on PRMS (a manufacturing software product) on AS/400. Migrating the product to Unix and Windows platforms. Principle software developer for special projects on multiple platforms (z/OS, AS400, Unix, Linux and Windows).

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* Managed CA-ACF2 (mainframe Access Control Facility) development life cycles versions 4.2 and 5.0. Major enhancements were:
	+ Command Propagation Facility, which synchronized ACF settings across multiple systems
	+ SAF Trace which enabled system programmers to identify which software products issued security calls. This feature was also given to IBM so that they could determine the security calls their products issued.
	+ Enhanced ACF2 command processor so the product could be integrated into multiple operating systems.
	+ VAX implementation of ACF2
	+ Mandatory Access implementation of ACF2 using hybrid of Bell-LaPadula model
	+ Resource Grouping of assets
	+ DB2 access control using ACF2
* Managed CA-Examine and Pan-Audit Information Systems auditor’s software. CA-Examine allowed auditors to audit IT systems. Pan-Audit allowed auditors to audit applications.
* PRMS – Computer Associates ERP and supply chain software (AS/400, Unix, Windows). Extended the RPG programming language by writing C programs to perform dynamic SQL for AS/400. Integrated AS/400 to window PCs. Reduced database queries from 80,000 lines of code to >100 lines of code.

**UCCEL,** Rosemont, IL **1986 - 1987**

**Senior Software Development Manager**

ACF2 Development manager, defining release enhancements, principle developer and manager of 14 member staff. Designed ACF2 release 4.2. Sold to Computer Associates International, Inc.

**SKK, INC.,** Rosemont, IL **1984 - 1986**

**Senior Software Developer**

Start-up software security company. First commercial access control system. Sold to UCCEL.

* Software developer on MVS (z/OS) and VS/1 ACF2 (Discretionary access control facility).
* Beta coordinator for ACF2 Release 4.0.
* Designed and coded MVS system intercepts, TSO interface, and ACF2 command processor in Release 4.1.
* Principle developer on VS/1 ACF2.

**NORTHERN ILLINOIS UNIVERSITY,** DeKalb, IL **1983 - 1984**

**Instructor – Computer Science Department**

Courses taught:

MSCS 260 – Programming Languages for Non-majors – (Spring-1984)

MSCS 360 – PL/I – (Spring 1983, Fall-1983)

MSCS 460 – IBM assembler – (Spring 1983, Fall-1983, Spring-1984)

MSCS 467 – Analysis and Design – (Summer-1983)

MSCS 462 – Data Structures – JCL and Utilities (Summer – 1983)

MSCS 560 – Advanced PL/I – (Fall-1984)

* Created curriculum for a programming class for non-computer science majors.

**EDUCATION**

**PhD, Engineering – Engineering (Emphasis: Computer Science), 2011**

VIRGINIA COMMONWEALTH UNIVERSITY, Richmond, VA

Dissertation Topic: Program Pathing Trust Model for Critical System Process Authorization

* Worked with Information Systems department in the School of Business and the Computer Science Department in the School of Engineering to create curriculum for MS degree in Information and System Security. Program was approved by the State of VA and is now being offered at VCU.
* Member of Phi Kappa Phi Honor Society

**Master of Science (MS), Computer Science, 1982**

NORTHERN ILLINOIS UNIVERSITY, DeKalb, IL

**Master of Art (MA), Philosophy, 1982**

NORTHERN ILLINOIS UNIVERSITY, DeKalb, IL

**Bachelor of Arts (BA), Philosophy, 1976**

WESTERN ILLINOIS UNIVERSITY, Macomb, IL

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**pROFESSIONAL Certifications**

* **CISSP** (Certified Information System Security Professional) – ISC2 Certification Number: 84213
* **ITIL** (Information Technology Infrastructure Library) **Foundations V3 Certification**
* **ITIL** (Information Technology Infrastructure Library) **Design Certification**

**Presentations & PUBLICATIONS**

**Blockchain Meetup –** November 29, 2016, Charlottesville, VA, Evolution of Blockchain

[**ADFSL Conference on Digital Forensics, Security, and Law**](https://www.facebook.com/note.php?note_id=10150192987017459) **–** May 25-27, 2011, Richmond, VA,MAC OS X Forensics: Password Discovery

**International Symposium on Engineering Secure Software and Systems (ESSoS)** – February 4-6, 2009, Leuven, Belgium, **Information Flow Control as a Foundation for Security Design Engineering**

**IBM SHARE Conference** August 15, 2009, San Jose, CA**,** Audits: Are You Ready?

**Midwest Computer Conference** at Northern Illinois University - 1995 – On the state of computer security from industry’s prospective

**EDPAA User Meeting** – 1991 Toronto, Canada, Auditing z/OS systems

**Computer Associates User Conference** – 1987 – 1994 and 1996

1987, Rosemont, IL – ACF2 Command Processor

1989, St. Louis, MO – ACF2 Release 4.1 Enhancements

1990, Orlando, FL – ACF2 B1 Mandatory Access Control, ACF2 Release 4.2 Enhancements

1991, New Orleans – CA-ACF2 Release 5.0, SAFTrace: Solving the Least Privilege Access Problem

1992, Orlando, FL – CA-Examine: Auditor’s Tool

1995, Orlando, FL – Merging and Converting CA-ACF2, RACF, and Top Secret

**UCCEL User Conference** – 1986 – Rosemont, IL, ACF2 VS/1

**SKK User Conference** – 1985 – Rosemont, IL, ACF2/VS1

**Conferences Attended**

NIST – Use of Blockchain in Healthcare and Research Workshop – September 26 and 27, 2016, NIST Headquarters, 100 Bureau Drive, Gaithersburg, MD

NIST – Use of Blockchain in Healthcare and Research Workshop – September 26 and 27, 2016, NIST Headquarters, 100 Bureau Drive, Gaithersburg, MD

NSA SELinux Symposium – March 14 and 15, 2007, Wyndham Hotel, Baltimore, Maryland

NSA SELinux Symposium – March 1 and 2, 2006, Wyndham Hotel, Baltimore, Maryland

NSA SELinux Symposium – March 2 and 3, 2005, Wyndham Hotel, Baltimore, Maryland

IBM SHARE – IBM User Conference

August,1999, Chicago, IL

August,1991, Chicago, IL

August,1987, Chicago, IL

March,1986, Anaheim, CA

August, 2017, Providence, RI

**pATENTS**

* **2010 patent:** serial number 61/405,378 – “A Process of Forensically Sound Vampire Acquisition of Volatile Memory Content from Apple PCs running OS X”

**RESEARCH**

* **Expose SAF Authentication using IBM z/OS Zowe interface**

Through Linux Foundation: Open Mainframe Project performing a proof of concept of opening up more z/OS APIs through Zowie (IBM’s new API architecture) using SAF calls as the demonstration.

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* **Permission based Blockchain: Access Control**

Access Control Blockchain (ACB) a secured anonymous ownership of data blockchain. Personal identity and information is removed from records and protected by blockchain. Owner of data is the only one that can grant access to personal information. Applications:

* + Healthcare Patient records
	+ Voting

Current implementation: Ethereum based, written in C, JAVA and Python. Will migrate to Linux Foundation’s IBM Fabric or INTEL Sawtooth after prototype has been completed.

* **Commodity and Fiat based Cryptocurrency**

Financial blockchain implementing both commodity and fiat currencies, taking advantage of each currency’s particular strengths to fulfill requirements of monetary theory principles. A digital currency creating value based upon consumer goods and services (commodity currency) and an index that sets value between commodities based upon supply and demand (fiat currency). Currently implementation: Bitcoin based written in C and C++.

* **Alt-coin Cryptocurrency**

Created alternate cryptocurrencies from bitcoin source code. Experimented with modifying the bitcoin wallets and Proof-of-Work algorithm for more secure and faster transactions. Although we were able to create alternate coins, and had success with the wallet, replacing proof-of-work was much more challenging due to the interdependencies in the bitcoin code.

* **OS X Forensics**

HexDumpReader – for OS X systems. Using our forensic process of putting a OS X system into sleep mode, the Sleep file and page data sets were collected from the OS X hard drive. HexDumpReader mapped active RAM from the Sleep file and the system’s data areas from the page data sets.

**Service**

* **Computer Science Undergraduate Committee –** Fall 2017 - Present
* **College of Engineering – Capstone Steering Committee –** Fall 2017 – Present
* **Linux Foundation: Open Mainframe Project - Technical Steering Committee–** Fall 2017 - Present
* **NSA Cybersecurity Certification Committee – Lead –** Fall 2018 to Present
* **Linux Foundation: Open Mainframe Project - International Summer Intern Coordinator –** Spring 2018 to Present
* **Linux Foundation: Open Mainframe Project – Board of Govenors –** Janurary 2019