

Growing in Digital Forensics – Practical Mentorship and Resources

Jessica Hyde

#MVS2023





MEET JESSICA

FOUNDER & OWNER, HEXORDIA

- Adjunct Professor, George Mason University

Previous:

- Director Forensics, Magnet Forensics
- Basis Technology
- Ernst and Young
- American Systems

DFIR Review, Chair
FSI: Digital Investigations, Associate
Editor
HTCIA IEC, 2nd VP
SWGDE, Member
OSAC, Member

#MVS2023

Value of Mentorship



Ask Yourself

- What do you plan to get out of mentorship?
- Has mentorship been of value to you?
- What are you looking to improve?



Every stage of your career: Mentor and Mentee





Mentors can help with

- Goal Setting
- Resume reviews
- Building portfolio
- How to get noticed
- Skill growth identification
- How to produce something
- How to grow
- Connections
- Resources





Two types of Mentorship

- Formal
 - Employer assigned
 - Part of a program
 - External mentor with formal relationship
- Informal
 - No official relationship
 - Folks you seek advice from
 - Often bidirectional



Internal Employment Mentorship

- Often assigned
- May be part of your annual review process
- Can be your advocate for reviews/promotions/adverse actions
- Navigates workplace politics
- Can be excellent takes initiative or can be mediocre





Practical Mentorship

Providing structure to mentorship



Where to start

- Resume Review
 - Have mentee send BEFORE Meeting
 - I request this as a starting point when I meet with a mentee
 - Allows me to get to know them (OSINT as well)
 - Draft questions about areas that I am curious if they are skilled?
 - Scripting languages, tools, certifications
 - Folks have trouble talking about themselves



First Meeting (30-45 min)

- Open ended questions to get to know them
- Go through areas to update resume and provide feedback
 - (1st Action item for next meeting)
- Ask them about their goals for mentorship
 - Draft personal/professional goals (2nd Action item for next Meeting)



Second Meeting (45-55min)

- Resume updates sent ahead of meeting
- Discussion about frequency of CV updates (monthly at most)
- Determine THREE Goals based on meeting
- Determine schedule of frequency for meeting



Goal Setting

- Three goals for the period (6 months to 1 year)
 - Learn a skill (ex: Python, YARA rules, Cloud)
 - Obtain a certification
 - Find a role
 - *Public contribution*
- Be specific
- Based on Passion areas (or figuring them out)
- Base goals on needs or roles desired



Maintenance Meetings

- Actions to goals
- Missed opportunities
- Help please
- Next steps



Actions to goals



Help, please



Check-ins (15 min)

- 1) Goal Review
- 2) Mentee answers:
 - What have I done towards my goal?
 - What are missed opportunities towards my goal?
 - How can my mentor help me?
- 3) Mentor Answers
 - How have I observed you meeting goal
 - What are areas for refinement.
 - How can I help the mentee
- 4) Draft Action Steps

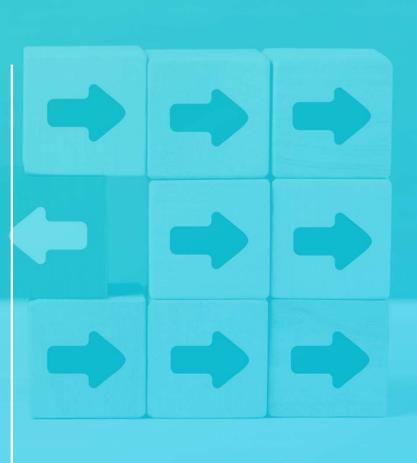


Create Action Items from Goals

- Learn a Skill
 - Find a program of study for the skill
 - Make measured goals for progress and a time for completion
- Obtain a cert
 - Research roles and certs they require
 - Determine study plan
 - Register for cert
 - Practice tests
- Find a role
 - Prep resume
 - Identify skill gaps
 - Look at network
 - Figure out where to look for roles
 - Application goals



Goals
Staying
consistent
and showing
up



Goal Adjustments

- Regular intervals
- Longer session to see if goals are still a good fit
- Adjust and make more specific
- Adapt to changes from learnings or life
- Ensure they are measurable
- SMART
 - Specific, measurable, achievable, relevant, time-bound





Doing the homework



Career Stages

DFIR Veterans and new folks need mentorship



#MVS2023



Practical Mentorship



Folks Looking for Mentors

- Students
- Career switchers
- DFIR Veterans looking for new roles
- LE/Military transition to IR
- Folks moving from the SOC



Student

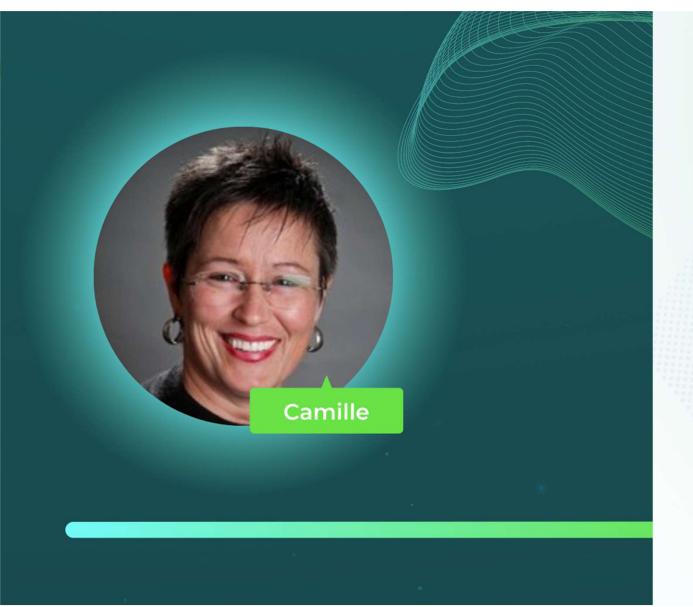
- Great research colleagues
- Promote their work
- Introduce them to folks
- Help push boundaries to get them to promote themselves
- Skills to learn



Career Switcher

- Articulating cross- industry relevant skills
 - Technical
 - Networking
 - Troubleshooting
 - Soft skills
 - Briefing executives
 - Customer service
 - Writing Experience







Transition (DF > IR)

- Often LE and Military finishing their "first" career
- Sometimes ready to transition out of LE
- Often times concerned about Skills Gap
- Employers sometimes underestimate!
- How to get noticed in industry and stand out



Folks moving from the SOC

- Self-advocacy
- Networking withing the organization
- Translatable skills to demonstrate on resume
- Hands on exercises or research to demonstrate
- Building a portfolio



Veterans looking for new roles

- Salary negotiations
- People leader vs technical contributor
- Connecting people
- Can be on learning how to balance life/work



Finding a mentor

What is in it for a mentor/mentee

- Advice
- Connection
- See the things you are missing!
- Help you prepare
- Someone in your corner
- Gas them up!
- Provide critical feedback



Reaching out to a possible Mentor

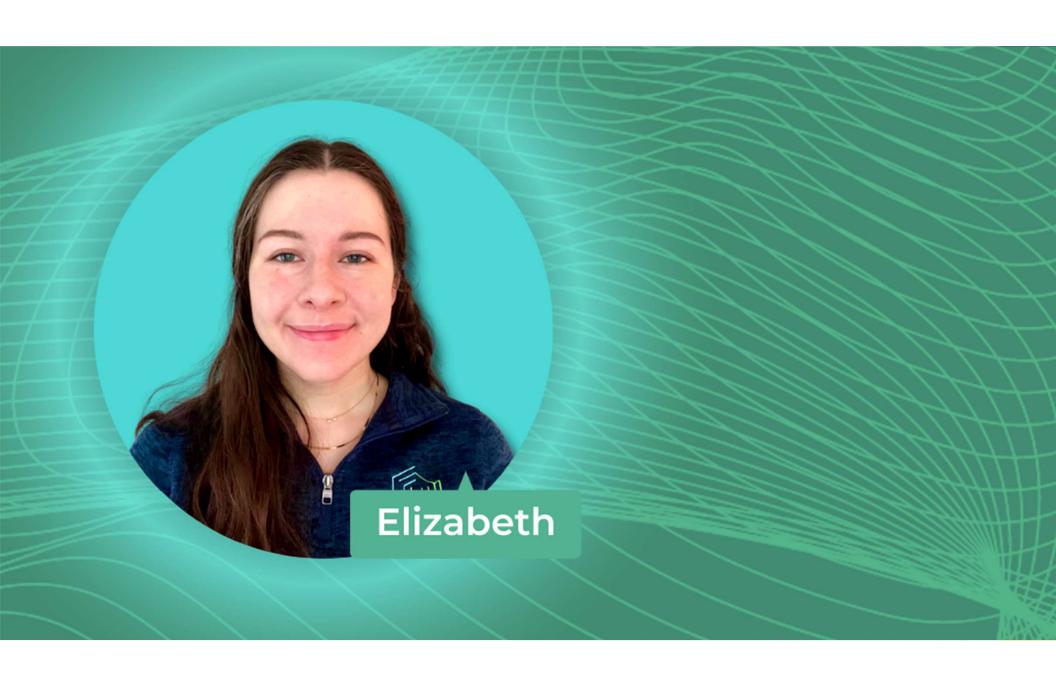
- Don't be discouraged
- Find someone doing the thing you want to be doing
 - Next step or many steps away!
- Offer to help them with research, collaboration, etc.
- Make a specific request
- Share information
- Do the homework!



Mentors sometimes seek out mentees

- See someone who has potential
- Excited to see where they can take it with just one more step
- Sometimes you identify folks you know can take it to the next level





Formal Mentorship Programs



Programs that exist

WiCyS

Share the Mic In Cyber

Play Like a Girl

Magnet Mentorship Day

Resume Review Programs at conferences



Join us on October 22nd as we #ShareTheMicInCyber FOLLOW.SHARE.RETWEET.ACT



Jessica Hyde Hexordia



Tanisha L. Turner Elastic







Mentorship Relationship

Maintaining the relationship



Mentorship is nurtured relationship.



Based on...

- Humility
- Respect
- Mutual interests
- Boundaries
- Structure
- Flexibility
- Personality compatibility
- Caring



Professional Respect & Interesting Work



Successful Mentorship
Kindness
Understanding
Communication
Impactful
Establishes trust and
vulnerability
Allows for honesty and
openness



Gas them up... but be real

- It is important to provide critique and areas for improvement
- Challenge them to make them better



Take the time to check in





Maintaining the relationship

- Mentee needs to continue the work
- Should be able to report on assignment completion or have new things they want to reach
- It is okay for mentorship to reach a natural end
- It is okay to not be a fit
- It is okay to take a pause and come back
- It is okay to check back in after a period especially after major goal success!
- Both people should be invested and active in the relationship



You ARE a mentor

Person you can call

- May not always need them
- May have different mentors for different situations
- Someone who has been through a particular thing
- Sometimes when you least expect it



Bidirectional Mentors

- Peers
- Colleagues
- Folks in tangential places
- Inspire each other





Hot Topics



Imposter Syndrome

- The elephant in the room
- Find the value in it = You CARE
- Leverage that to be awesome
- But don't let it disable you!
- Name it and tell it to be quiet



How Do I Break in to DFIR

- DFIR is not always entry level!
- Migrate from other roles (SOC, IT, LE)
- Find a mentor
- Public Works!





Education

- Formal university programs
 - Undergraduate or Graduate
- Training Programs
 - DFIR Diva's affordable training list
 - SANS
 - Cyber5W



What Certification should I Get?

- Look up the roles you are interested in!
- Tool vendor cert?
- Agnostic certification?
- Maintenance requirements?
- What/how is it testing?
- Practicum? Knowledge questions?
- Prerequisite training or experience?
- Cost?



Resume / Curriculum Vitae

- Formats change!
- Keep a master document, submit specific
- Regularly update (monthly) and Linked In
- CV vs Resume
- Proposals, expert witness, professional orgs, peer review submissions, speaking submissions
- Technical Skills Proficient with vs Familiar with



Networking

- Local low-cost events
 - BSides
 - 2600 groups
 - DefCon groups
 - High-Tech Crime Investigation Association (HTCIA)
- Conferences
 - Techno Security
 - DFRWS
 - SANS DFIR Summit
 - Magnet User Summit



Social Media

- Separate DFIR only accounts
- Keep it professional and positive
- Places to connect
 - Digital Forensics Discord Server
 - #DFIR on Mastodon
 - #DFIR on Twitter
 - #DFIR on LinkedIn
 - Computer Forensics Subreddit
 - Even Tik Tok and Instagram



Share and Contribute

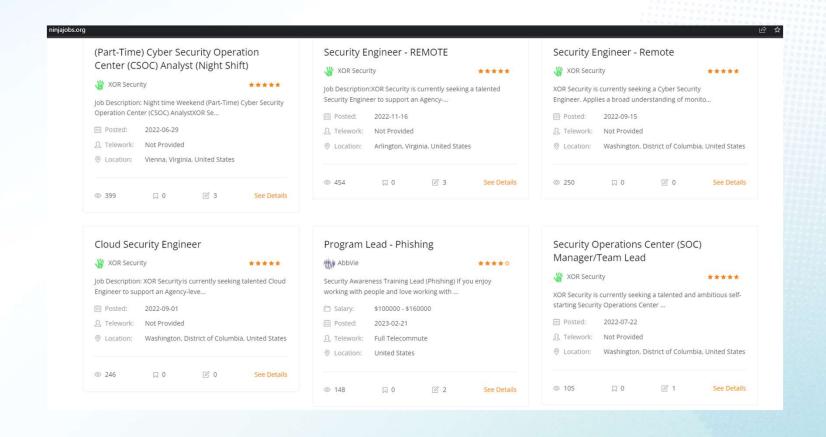
- Most important thing you can do to stand out!
 - Contribute Code (LEAPP project, Autopsy Modules, Volatility))
 - Build CTFs
 - Artifact Information (Artifact Genome Project, Artifact Museum)
 - Share images (CFReDS, Digital Corpora)
 - Write! Blogs thisweekin4n6.com
- GOAL Share TECHNICAL work first!



Job Postings



Ninja Jobs



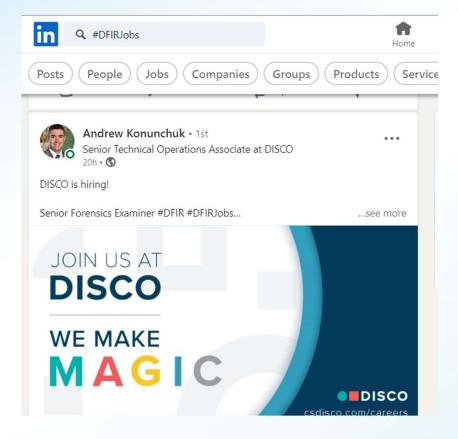


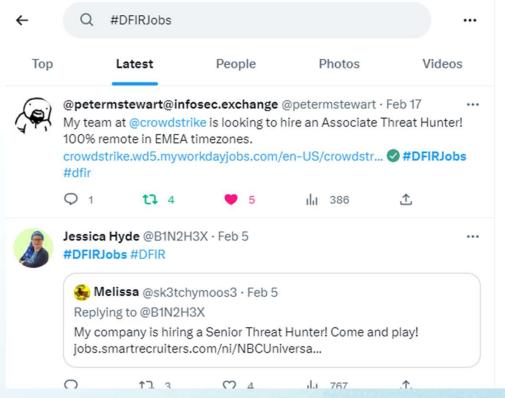
About DFIR

Date Added	Post Expires	Employer	Location	Description
2023-02-17 00:00:00	Ongoing	Detego Global	Horsham, West Sussex	Senior Digital Forensics Analyst
2023-02-17 00:00:00	Ongoing	Detego Global	Horsham, West Sussex	Junior Digital Forensic Analyst
2023-01-28 00:00:00	Ongoing	Charles Schwab	Phoenix, AZ	Sr. Staff - Forensics Analyst - US \$110k-220k
2023-01-28 00:00:00	Ongoing	Cisco Talos	Remote US	Incident Response Consultant, Talos
2023-01-28 00:00:00	Ongoing	Columbia Sportswear	Portland, OR	Cybersecurity Engineer
2023-01-28 00:00:00	Ongoing	Costco	Issaquah, WA	Cyber Threat Intelligence Analyst
2023-01-28 00:00:00	Ongoing	IHG Hotels & Resorts	Atlanta, GA	Senior Analyst, Cyber Threat Intelligence
2023-01-28 00:00:00	Ongoing	Raytheon	Arlington, VA	Cyber Threat Hunter - ONSITE
2023-01-28 00:00:00	Ongoing	Toyota Tsusho Systems US, Inc	US Remote	Threat Hunting Operations Analyst (100% Remote)
2023-01-28 00:00:00	Ongoing	Trustwave Government Solutions	US Remote	Sr. Security Consultant, DFIR



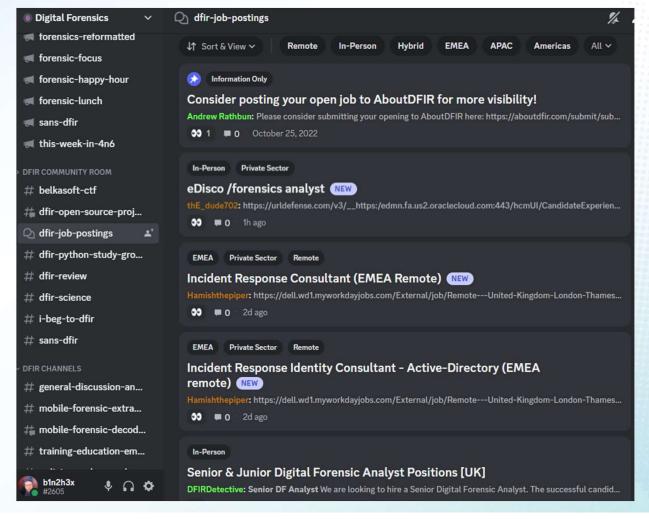
#DFIRJobs (Linked In, Twitter, Mastodon)







Digital Forensics Discord Server





Get Your Start in DFIR



About Contact Donate View Jobs Post a Job Become a Training Partner

Intern, Incident Response







Posted 1 week ago



Sony

Sony Corporation of America, located in New York, NY, is the U.S. headquarters of Sony Group Corporation, based in Tokyo, Japan. Sony's principal U.S. businesses include Sony Electronics Inc., Sony Interactive Entertainment LLC, Sony Music Entertainment, Sony Music Publishing and Sony Pictures Entertainment Inc. With some 900 million Sony devices in hands and homes worldwide today, a vast array of Sony movies, television shows and music, and the PlayStation Network, Sony creates and delivers more entertainment experiences to more people than anyone else on earth. To learn more:

www.sony.com/en.

Position Summary:

Sony Corporation of America (SCA), is seeking an Intern, Incident Response to join the Global Information Security Department (GISD) located in Herndon, VA for the 2023 summer internship program. This position will assist the Security Operations Center (SOC) team within the Global Security Incident Response Team (GSIRT).



USAJobs

Save this search. We'll email you new jobs as they become available.

Senior Computer Scientist

Department of the Air Force - Agency Wide

Department of the Air Force

O Linthicum, Maryland

Open 02/14/2023 to 02/27/2023

Starting at \$171,268 Per Year (ST 00)

Starting at \$49,082 Per Year (CL 26-27)





Forensic Examiner - FT/Permanent

U.S. Courts

Judicial Branch

Saint Louis, Missouri

Open until filled - applications will be considered as they are received.

Open 11/04/2022 to 11/03/2023

Computer Investigative Forensic Analyst - Direct Hire 'AMENDED'

Internal Revenue Service

Department of the Treasury

Multiple Locations

Open 01/10/2023 to 01/09/2024

Starting at \$116,393 Per Year (GS 14)





Special Agent - Cybersecurity/Technology Background

Federal Bureau of Investigation

Location Negotiable After Selection

Department of Justice

Starting at \$73,916 Per Year (GL 10) Permanent - Must work a minimum of a 50hour workweek, which may include irregular hours, and be on call 24/7, including holidays and weekends.













Open 01/25/2023 to 01/24/2024

Digital Forensic Analyst

U.S. Army Criminal Investigation Command

Department of the Army

Fort Benning, Georgia

Army Criminal Investigation Division

Open 02/17/2023 to 03/03/2023

Starting at \$69,107 Per Year (GS 11-13)











INTELLIGENCE OPERATIONS SPECIALIST (CYBER)

Defense Threat Reduction Agency

Department of Defense

Fort Belvoir, Virginia

Operations and Integration Directorate (OI)

Open 02/10/2023 to 03/06/2023

Starting at \$112,015 Per Year (GG 13)





Forensic Focus

SF

Full time



ull time

Digital Forensic Specialist

🖹 Serious Fraud Office

Nybrid (Serious Fraud Office, Cockspur Street, London, UK)

The Digital Forensic Unit (DFU) is responsible for the processing and analysis of all digital evidence seized by or provided to the Serious

23 Feb, 2023

Senior Digital Forensic Engineer

🖹 National Crime Agency

(Tamworth, UK)

National Crime Agency Location: Tamworth Salary: £36,742 - £44,912 + £3,000 Recruitment and Retention Allowance Closina

20 Feb, 2023



Full time



Full time

Senior Digital Forensics Examiner

A National Crime Agency

© Hybrid (Bristol, Warrington, Kingston-Upon-Thames)

National Crime Agency Location: Bristol, Warrington, Kingston-Upon-Thames Salary:

20 Feb, 2023

Cyber Digital Forensics Officer

A National Crime Agency

Hybrid (Bristol, Warrington, Tamworth and Kingston-Upon-Thames)

National Crime Agency Location: Bristol, Warrington, Tamworth and Kingston-Upon-

20 Feb, 2023



Full time



ull time

Digital Forensics Operations Officer

Agency

 Hybrid (Stevenage, Dover, Gillingham, Warrington, Tamworth, Nottingham, Birmingham, Leicester, Bristol and Kingston-Upon-Thames)

Digital Forensics Examiner

A National Crime Agency

Hybrid (Bristol, Tamworth, Warrington, Kingston-Upon-Thames)

National Crime Agency Location: Bristol, Tamworth, Warrington, Kingston-Upon-Thames Salary: £28,840 - £37,748 + £3,000





Resources:



Mentorship Resources

- https://dfirdiva.com/getting-into-dfir/
- https://www.magnetforensics.com/blog/jobhunting-dfir-field/
- https://www.hexordia.com/blog-1-1/pathwayto-digital-forensics
- https://tisiphone.net/2023/01/03/lessonslearned-from-cybersecurity-mentoring/



Getting Started

- DFIR Diva
- Cyber5W
- Startme.stark4n6.com





Keeping Current

- Phill Moore's
 - This Week in 4n6 blog of all the week's forensic content
- Michael's
 - Digital Forensic Survival Podcast
- Richard Davis'
 - 13 Cubed You Tube Channel
- Joshua James'
 - DFIR Science You Tube Channel



Keep Practicing

- Magnet Forensic Summit CTFs
- Cyber Defenders Blue Team CTFs







Python

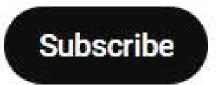
Alexis Brignoni's You Tube based course

- DFIR Specific class
- https://www.youtube.com/playlist?list=PLz61osc7c30qQ_xBZJbzZdIkVd8HnxLmC

DFIR Python Study Group

Class O - DFIR Python Study Group







YARA

Resources:

- Twitter #100DaysOfYara
- 100 Days of Yara
 https://dmfrsecurity.co
 m/2021/12/20/100 days-of-yara-day-1 basics/
- https://github.com/InQ uest/awesome-yara



Replying to @milliped and @yararules

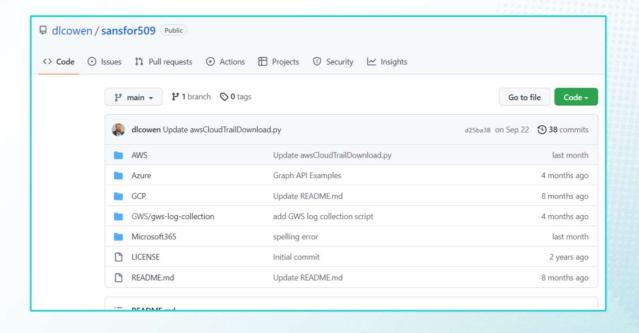
YARA is an ancronym for: YARA: Another Recursive Ancronym, or Yet Another Ridiculous Acronym. Pick your choice.

10:45 AM · Sep 22, 2016 · Twitter for Android



Cloud

- Basic Cloud Understanding: A Cloud Guru
- SANS FOR 509 Public GitHub https://github.com/dlcowen/sansfor509





Collaborate with the DFIR Community



Standards groups

SWGDE

NIST OSAC



SWGDE swgde.org



Home Who We Are

2022-01-13 SWGDE Best Practices for Vehicle Infotainment and Telematics Systems v3.0

2022-01-13 SWGDE Best Practices for Obtaining Google Reverse Location Data for Investigative Purposes v1.1

2022-01-13 SWGDE Best Practices for Drone Forensics v1.0

2022-01-13 SWGDE Best Practices for Acquiring Online Content v1.0

2020-09-17 SWGDE Best Practices for Digital Evidence Acquisition from Cloud Service Providers v1.0

2020-09-17 SWGDE Best Practices for Examining Magnetic Card Readers v3.1

2020-09-17 SWGDE Best Practices for Mobile Device Evidence Collection & Preservation Handling and Acquisition v1.2

2020-09-17 SWGDE Best Practices for Mobile Device Forensic Analysis v1.0

2020-09-17 SWGDE Core Competencies for Embedded Device Forensics v1.0

2020-09-17 SWGDE Technical Notes on Internet of Things Devices v1.0

2020-09-17 SWGDE Test Method for Bluetooth® Module Extraction and Analysis v1.1

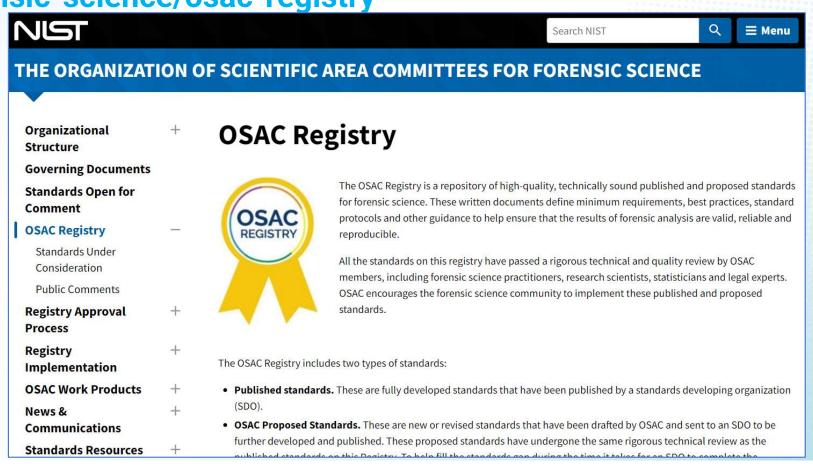
2020-09-17 SWGDE Test Method for Skimmer Forensics - Analog Devices v1.0

2020-09-17 SWGDE Test Method for Skimmer Forensics - Digital Devices v1.0



NIST OSAC

www.nist.gov/organization-scientific-area-committeesforensic-science/osac-registry





Journals and Peer reviewed work

AAFS

FSI:DI

DFRWS DFIR Review



American Academy of Forensic Science

www.aafs.org



Digital & Multimedia Sciences-2022

C5 Methods for Evaluating and Optimizing Automated Detection/Classification Systems in the Forensic Environment

Jeff Smith, MS+, MITRE, McLean, VA

Learning Overview: After attending this presentation, attendees will better understand the foundational principles underlying detection/classification systems used in forensics, such as biometric recognition and multimedia manipulation detection, considerations for their operational use, and novel techniques for implementing these systems in a forensic environment.

Impact Statement: This presentation will impact the forensic science community by increasing baseline knowledge in the operating principles behind automated systems and by proposing best practices and new methods for their implementation in a forensic environment.

It is necessary to implement automated systems in forensics and intelligence in application areas such as biometric recognition and multimedia manipulation detection. These analytics leverage machine learning techniques that output a confidence value or posterior probability of classification given the evidence input. This probability is typically a value between 0 and 1. A fireshold, set to 0.5, would assign samples of outputs larger or equal 0.5 to the positive class, and the rest to the negative class. While this arbitrary threshold can work well in many cases, as will be shown in this presentation, an optimal threshold can be found by evaluating performance against known data.

The results of these systems when evaluated against known data can be summarized with a Confusion Matrix (example in Figure 1) of True Positives (TP), False Positives (FP), True Negatives (TN), and False Negatives (FN).



Figure 1: Example Confusion Matrix at an arbitrary threshold shows count of False Positives, False Negatives, True Positives, and True Negatives.

The most common evaluation technique is the area under the Receiver Operating Characteristic (ROC) curve in order to establish overall system performance. The ROC curve (example seen below in Figure 2) is a plot of the system's True Positive Rate (TPR):

over its False Positive Rate (FPR):

$$FPR = \frac{false\ positives}{false\ positives+true\ negatives}$$





Forensic Science International: Digital Investigations (FSI:DI)





DFRWS

dfrws.org



DFRWS EU 2023

March 21, 2023

The DFRWS-EU 2023 Conference will be held Tuesday, March 21 through Friday, March 24....





DFRWS APAC 2022

September 28, 2022

The DFRWS-APAC 2022 Conference will be held Wednesday, September 28 through Friday, September 30....





DFRWS USA 2022

July 11, 2022

The DFRWS-USA 2022 Virtual Conference was held Monday July 11 through Thursday, July 14,...





DFIR Review dfir.pubpub.org

Featured Posts





Published: Jul 11, 2022

Turbo Speed: Parsing Device Health Services from Google

by Kevin Pagano



Published: Sep 28, 2022



by Scott Koenig



Published: Jun 02, 2022

Ain't That a Kik in the Head: Kik Messenger iOS Analysis

by Kevin Pagano and Alexis Brignoni



Published: Apr 11, 2022



Community Organizations

HTCIA

IACIS

DFIR Discord



High Tech Crime Investigation Association

htcia.org

∦нт⊂и	HOME ONLINE TRAINING EVENTS + ABOUT + MEMBER LOGIN	f ¥ in □
February 27	HTCIA Ontario Chapter Townhall 6:30 PM - 7:30 PM HTCIA Ontario Chapter members, your attendance is requested to an important townhall of all current members. We need your support and attendance discussing an important matter regarding your chapter.	Register
w March	March Virtual Meeting - Hunch.ly (Silicon Valley and Southern California Chapters) 10:00 AM - 11:00 AM ALL CHAPTERS WELCOME (Virtual Chapter Meeting) Click this link to automatically register for all 2023 HTCIA-SV/SoCal meetings: https://us06web.zoom.us/meeting/register/tZAtce-srz0qE9Z0mLh2L14s61r_LN5axvnz Justin Seitz on	
w March 15	HTCIA New England Chapter March 15th 2023 Meeting 8:00 AM - 1:00 PM SAVE THE DATE Speaking Slot Speaker Bio Topic title Summary of topic 9-10 Nilay R Mistry Nilay Mistry is the most senior and first faculty of Digital Forensics and Cyber Security in the	Register
w March	Zoom Mid-Atlantic Chapter Meeting 2:00 PM - 4:00 PM Join us on March 15 at 2:00 PM via Zoom with Michael Robinson. Michael will be regaling us with mystical tales from the world of Incident Response; about battles fought and lessons learned. "Michael is currently a Director at	Register



IACIS

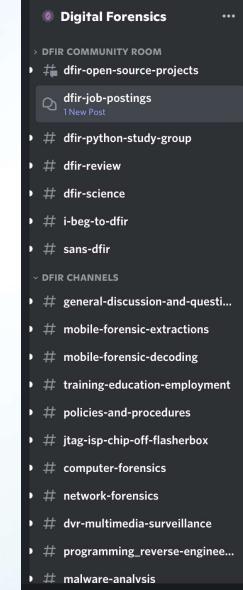
iacis.com

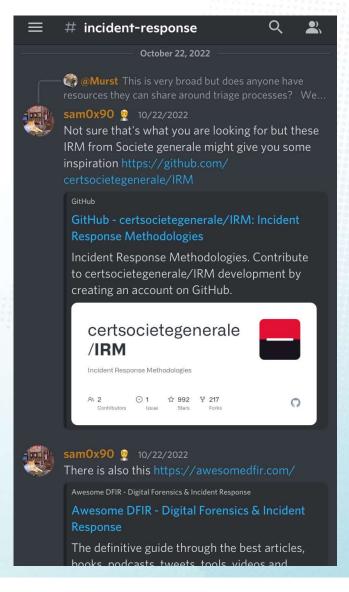




DFIR Discord









Summary

- You can be a mentor and mentee at any phase
- Self reflect and do the work
- There are practical ways to work with others
- Multiple mentors for multiple parts of your journey





MOVING UP IN DFIR: A MENTORSHIP DAY PANEL

February 27, 2023 | 1:00 PM EST

REGISTER NOW!









QUESTIONS?

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Hexordia.com

