# AI-driven collaborative learning and ethical reasoning in NCAE Co-Op centers

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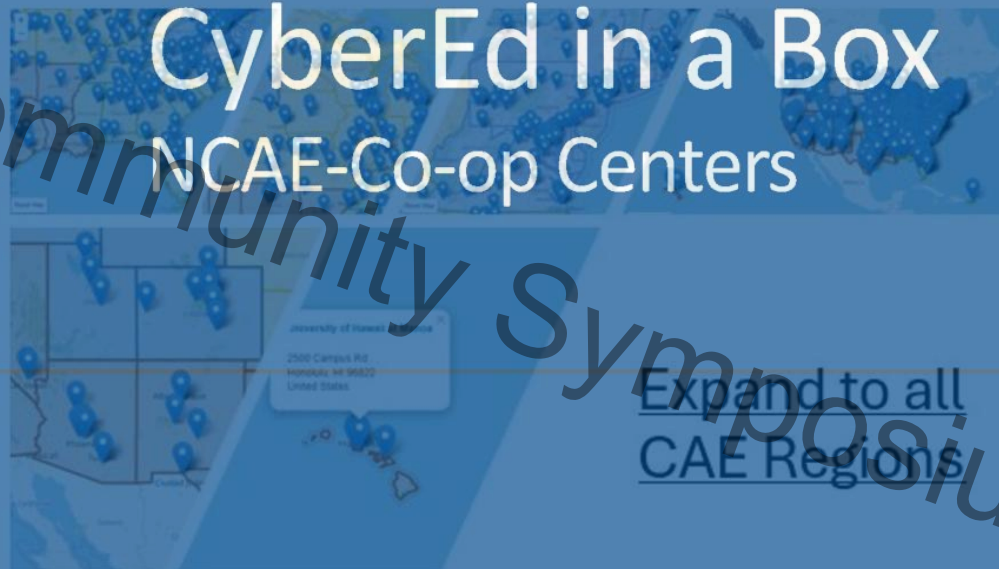
# What's in the Box?



| Assessment |
|---|
| Haystack |
| **Placement** |
| NICE / DCWF |
| |
| **Content Certification** |
| NCAE-C + Industry |
| **Apprenticeship** |
| Mentors / Industry |
| |
| **Services** |
| Speakers Bureau |
| **Community** |
| Cyber 12 CyberAlumni |
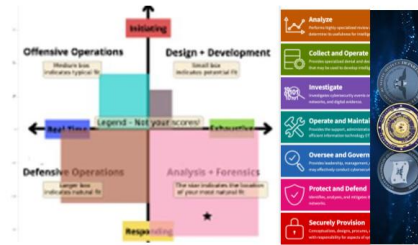
Baseline + Your Content

**Assess**: CyberGEN.IQ

**Assign**: NIST/NICE roles

**Customize**: Content/Feedback

**Track**: CyberWallet

**Visualize**: VR

# Assess

## HOW IT WORKS

Assessment focuses on five key cerebral areas:
- Critical thinking
- Deliberate action
- Real-time action
- Proactive thinking
- Reactive thinking

Maps to four domains of cybersecurity:
- Offensive operations
- Defensive operations
- Analytics and forensics
- Design and development

Domains mapped to NICE Framework Work Roles
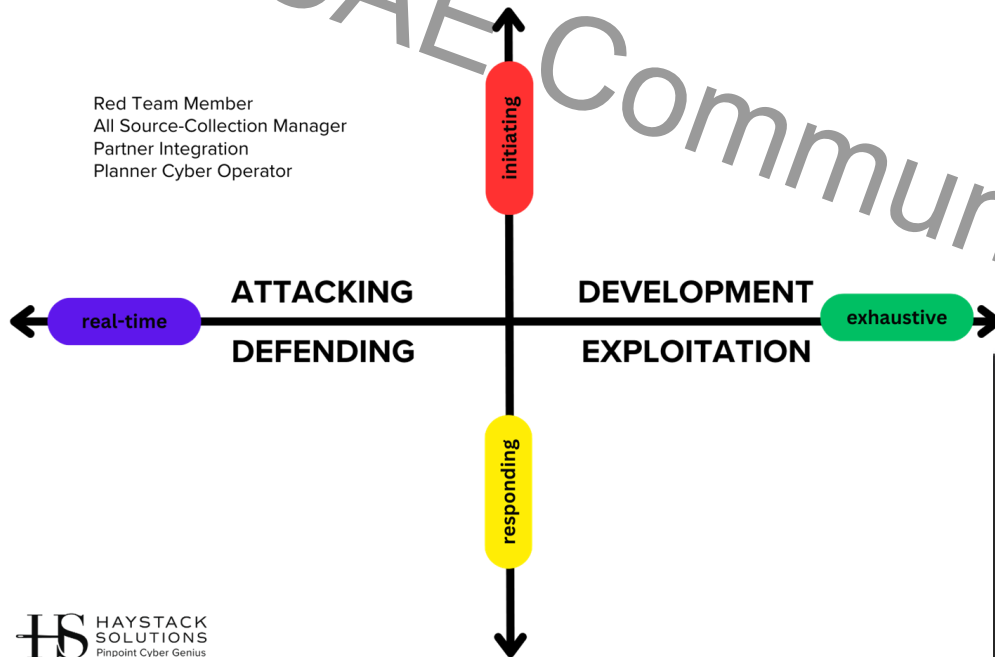
HAYSTACK SOLUTIONS

Assess

# Assign Work Role

**Click on any of the below links to visit the NICE Framework Work Role Page:**

All Source-Collection Manager
All Source-Collection Requirements Manager
Partner Integration Planner
Cyber Operator

Red Team Member
All Source-Collection Manager
Partner Integration
Planner Cyber Operator



| OFFENSIVE | DEFENSIVE | ANALYSIS | DEV/DESIGN | PROBABILITY OF SUCCESS | TOP SCORE |
|---|---|---|---|---|---|
| 91 | 76 | 67 | 70 | 70 | Spatial Reasoning |
| 90 | 69 | 43 | 72 | 84 | Need for Cognition |
| 75 | 71 | 58 | 63 | 65 | Spatial Reasoning |
| 61 | 39 | 43 | 63 | 76 | Dynamic Systems Control |
| 23 | 27 | 35 | 32 | 89 | Pattern Vigilance |
| 74 | 36 | 34 | 73 | 91 | Spatial Reasoning |

HAYSTACK SOLUTIONS
Pinpoint Cyber Genius

# Customize

## Cybercrime Investigation

IN-WRL-001

Responsible for investigating cyberspace intrusion incidents and crimes. Applies tactics, techniques, and procedures for a full range of investigative tools and processes and appropriately balances the benefits of prosecution versus intelligence gathering.

**Tasks**

**Knowledges**

**Skills**

S0469: Skill in navigating the dark web
S0470: Skill in using the TOR network
S0471: Skill in examining digital media
S0477: Skill in identifying anomalous activity
S0509: Skill in evaluating security products
S0589: Skill in preserving digital evidence integrity
S0607: Skill in collecting digital evidence
S0608: Skill in processing digital evidence
S0609: Skill in transporting digital evidence
S0620: Skill in evaluating the trustworthiness of a supply chain
S0651: Skill in performing malware analysis
S0807: Skill in solving problems
S0848: Skill in performing behavioral analysis
S0854: Skill in performing data analysis
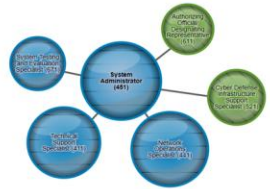S0856: Skill in performing digital evidence analysis

**Related Resources**

> Cyber Crime Investigator Alain Stevens, Pacta

**Related Courses**

- **CEH - Certified Ethical Hacker Certification Exam Prep Course (Evening)**
  ASM Educational Center
  Classroom; Online, Instructor-Led; Online, Self-Paced
- **CEH - Certified Ethical Hacker Certification Exam Prep Course (Boot Camp)**
  ASM Educational Center
  Classroom; Online, Instructor-Led; Online, Self-Paced
- **CHFI - Computer Hacking Forensic Investigator Certification Exam Prep Course (Boot Camp)**
  ASM Educational Center
  Classroom; Online, Instructor-Led
- **CHFI - Computer Hacking Forensic Investigator Certification Exam Prep Course (Evening)**
  ASM Educational Center
  Classroom; Online, Instructor-Led
- **Rocheston RCCI**
  Silotech Academy
  Online, Instructor-Led; Classroom

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System Administrator | Compare against another Work Role | Hide Diagram | ℹ | Clear selection

Begin typing to search work role names. Or **search job titles**. **Search job titles**.

**Details** | Spotlight Videos | Tasks | KSAs | Capability Indicators | Common Relationships | Federal Data | Micro-Challenge

## System Administrator

Responsible for setting up and maintaining a system or specific components of a system (e.g. for example, installing, configuring, and updating hardware and software; establishing and managing user accounts; overseeing or conducting backup and recovery tasks; implementing operational and technical security controls; and adhering to organizational security policies and procedures).

**Community:** IT
**Category:** Operate and Maintain
**Specialty Area:** Systems Administration
**OPM ID:** 451

[ See USAJOBS listings coded for System Administrator ]

**Related Functional Titles**

The following job titles have been identified by subject matter experts as either alternative titles for this work role or including the functions of this work role as part of their job duties.

- Application Security Administrator
- Identity Access Manager
- Local Area Network (LAN)/Wide Area Network (WAN) Administrator
- Platform Specialist
- Security Administrator
- Server Administrator

# Baseline + AI



## Project Scholarship

Given Objectives for Writing Policy
Use Student X Customized Training Plan
Use CyberGEN.IQ Strengths, Gaps, Challenges
Customize

+ 🌐 Search ···

**Add files**
Chats in this project can access file content

**Add instructions**
Tailor the way ChatGPT respo

## Course Information

- Course dates: 04/03/2024 - 06/05/2024
- Class pace: Asynchronous
- Synchronous Lecture Sessions (Recorded): Tuesdays, 6:00 PM PST on Zoom
- Weekly Office Hours: Thursdays, 7:00 PM PST, (Zoom TBD)
- TA available on Slack group, Canvas Messenger, and by appointment
- Location: Online in Canvas

| Part 1 | Part 2 | Part 3 | Part 4 |
|--------|--------|--------|--------|
| **Week 1** Introduction to Course and Cybersecurity Frameworks (CSF) | **Week 3** Threat Modeling and Analysis | **Week 5** Risk Mitigation Strategies | **Week 8-9** CSF Validation |
| **Week 2** Cybersecurity Governance, Risk and Compliance | **Week 4** Vulnerability Assessment Tools | **Week 6** Incident Response and Management | **Week 10** Tabletop Exercises |
| | | **Week 7** Legal and Ethical | |

# EC-Council + AI

## Project Scholarship

**Apply Baseline**
Student X Training Plan
Customize EC - Council Labs and Course

+ 🌐 Search ···

**Add files**
Chats in this project can access file content

**Add instructions**
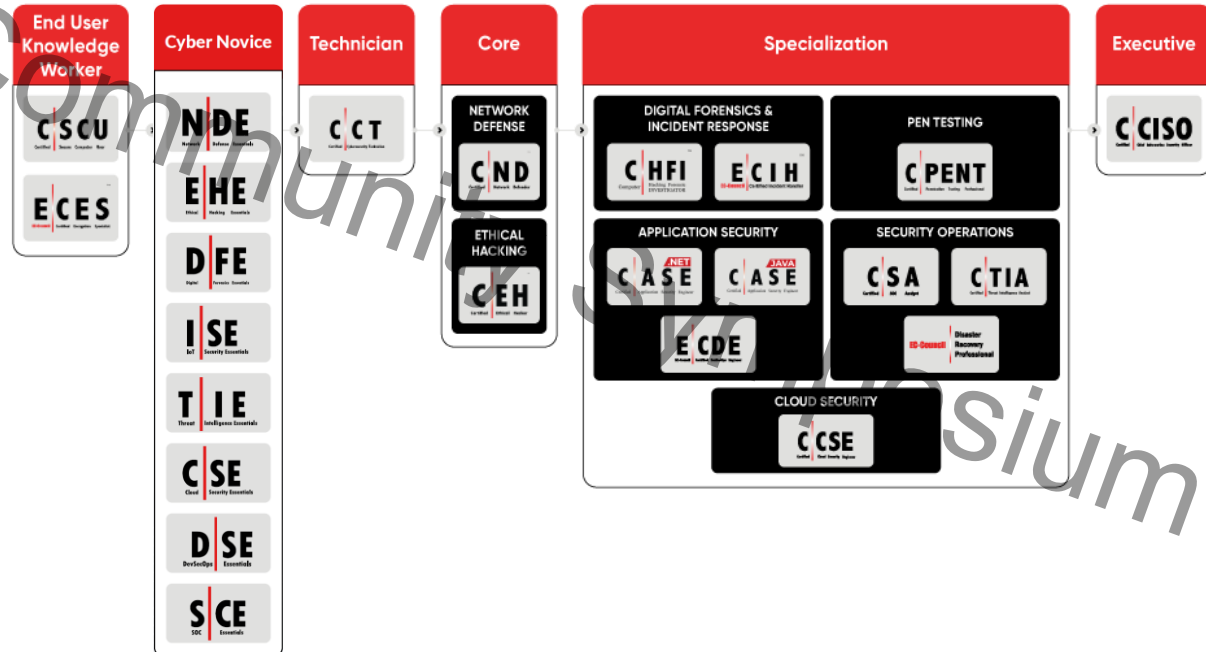Tailor the way ChatGPT responds in this project

## Key Knowledge, Skills, and Tasks (KSTs)

### Knowledge (K) (3):

✓ **K0002** – Knowledge of risk management principles and frameworks

✓ **K0049** – Knowledge of cybersecurity policies, procedures, and governance

✓ **K0070** – Knowledge of forensic processes for security investigations

### Skills (S) (2):

✓ **S0215** – Skill in managing and implementing cybersecurity policies

✓ **S0321** – Skill in overseeing compliance audits and risk assessments

### Tasks (T) (1):

✓ **T0443** – Develop, review, and implement enterprise cybersecurity policies

## EDUCATION & CERTIFICATION
Industry Certifications

Over 300,000 certified members



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# Gaps & Skills Development

1. **Enhancing Defensive Operations Exp**
   a. **Action:** Gain hands-on experi
      defensive security exercises
   b. **Tools:** Splunk, Security On
2. **Advanced Leadership & Manag**
   a. **Action:** Complete cybers
      programs.
   b. **Tools:** CISSP, CISM, H
3. **Refining Risk Assessment & C**
   a. **Action:** Gain experience
   b. **Tools:** NIST Risk Manage

# AI-Assisted Learning & De

✓ **Risk Management Simulations:** RangeF

✓ **Cybersecurity Policy Labs:** Coursera Gove

✓ **Leadership Training:** SANS Cybersecurity Lead

Free access to th
Cybersecurity C
training to 1,0

Sign up at
isc2.o

These models help train cybersecurity professionals to think beyond technical responses and consider ethical consequences in high-pressure scenarios.

# Ethical Reasoning

**IBM Debater AI**

Virtue ethics, utilitarianism, deontological ethics
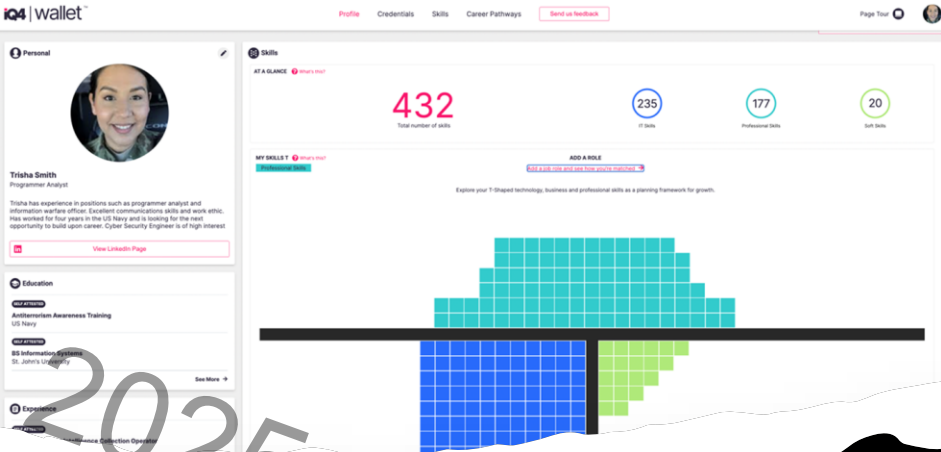
**Delphi AI**

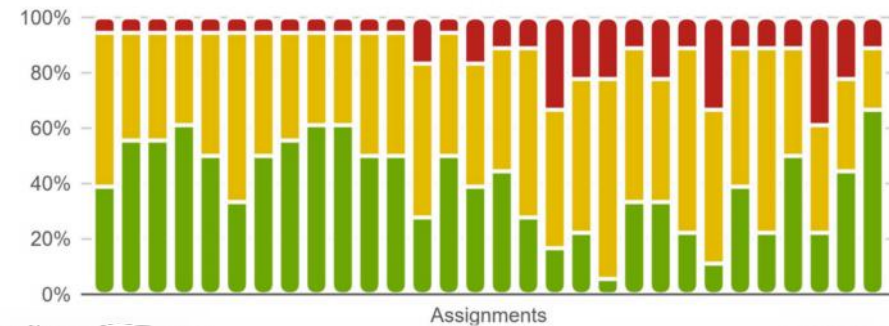University of Washington Allen Institute

Provides moral guidance

**Stanford's Ethical AI Simulator**

Models ethical dilemmas, explore consequences
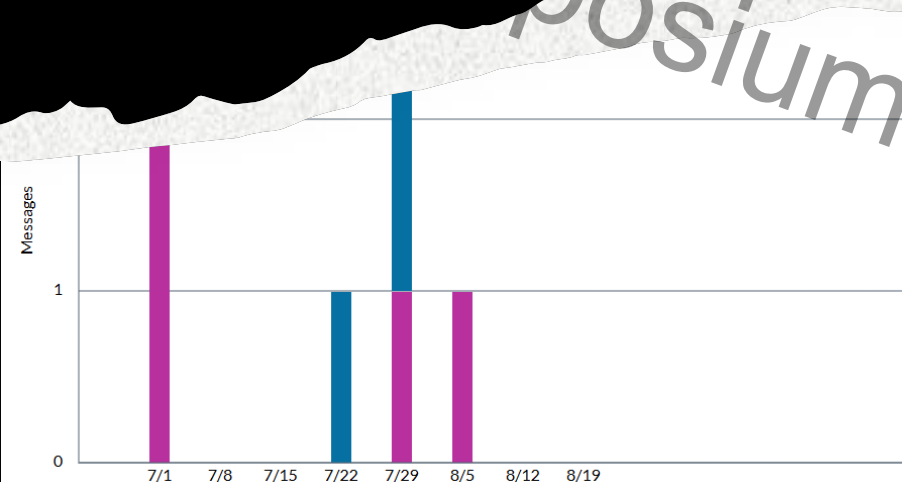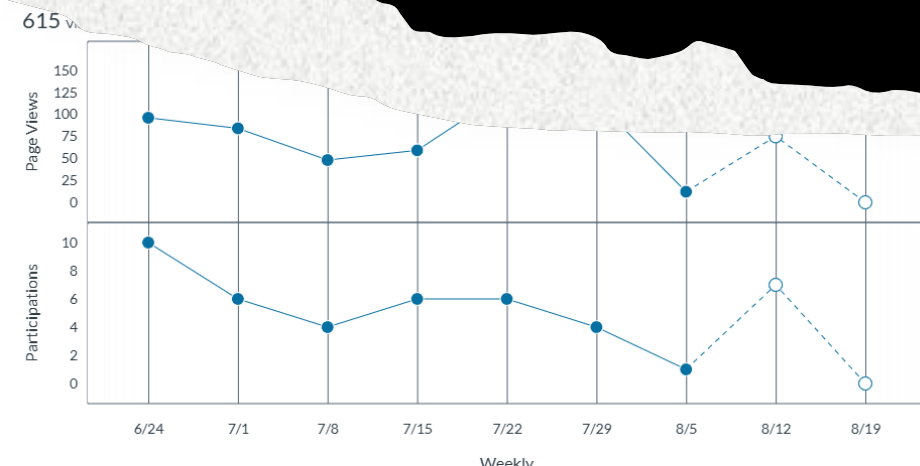
VR or gamified environment

# TRACK

INTERACTIONS
PAGE VIEWS
KST COMPLETION RATES

# Micro-credentialing and Career Pathways

iQ4 Wallet

Credly AI Matching (Acclaim by Pearson)

>> Match skills and certifications/employment

LinkedIn Skills AI

>> Analyze job postings and in-demand cyber skills

ExtraHop AI (Security and Threat Intelligence)

>> Detects real world cybersecurity threats

>> Helps students train for real incidents

# Visualize The Future of Cybersecurity Education
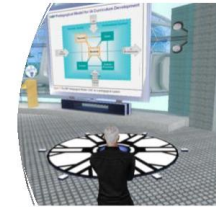
## Experiential

- Simulated Company
- Policy Review and Writing
- Incident Response Plan
- Tabletop Assessments
- Insider Threat Analysis
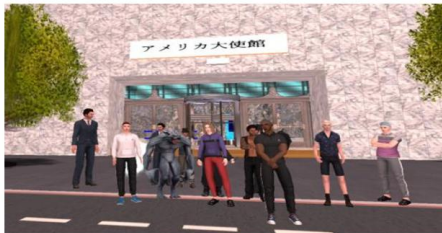- Co-op Deliverables

## Skills-based

- EC-Council Lab Suite
- Virtual Reality Lab Suite

## Co-op

- Entry Level
- Mid-level

Careers Preparation National Center

CAE IN CYBERSECURITY COMMUNITY

CyberEd Ecosystem

# Research

| Critical Thinking | Exhaustive | Responding | Initiating | Real-Time | ODAD Cumulative Weighted | Cognitive Cumulative Out of 500 | Total Cumulative Score | % Cum/Tot | Percentile Rank |
|---|---|---|---|---|---|---|---|---|---|
| 36.6 | 43.5 | 39.5 | 28 | 52.5 | 48 | 4 | 52 | 0.058 | 13 |
| 54 | 39.5 | 40 | 50.5 | 29.5 | 44 | 214 | 257 | 0.286 | 17 |
| 43 | 2.5 | 8.5 | 74.5 | 27.5 | 38 | 4 | 42 | 0.047 | 23 |
| 36.8 | 27 | 68 | 31 | 27 | 56 | 190 | 246 | 0.273 | 9 |
| 36.4 | 27.5 | 46 | 41 | 1.5 | 39 | 152 | 191 | 0.213 | 21 |

- AI can match cognitive strengths to NICE Framework roles.
- Learning paths can be adapted dynamically based on real-time performance.
- AI-driven feedback can refine weaknesses (e.g., initiating vs. responding).
- Virtual environments and peer interactions enhance practical training.
- Ethical reasoning modules can be personalized to strengthen decision-making.
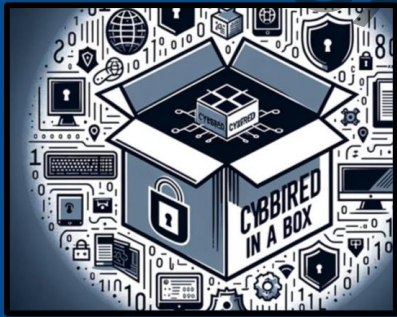
# Community

## Cyber 12 Services

Building Assets for students by students

- Charter | Manual
- Policy Library
- Branding and Marketing
- Apprenticeship Shop
- Cyber12 HR / Legal Department
- Cyber12 Speakers Bureau
- Cyber12 Research Organization
- Cyber12 Regional Database



**Cyber Alumni**
Triple C Cybersecurity Community.



CAE IN CYBERSECURITY COMMUNITY

RESOURCE SUPPLY BADGE | GENIUS LEARNER BADGE | TEAM PLAYER BADGE | UPSKILLING BADGE | INVESTED LEARNER BADGE

LEADERSHIP BADGE | VOLUNTEER BADGE | BEST GAMER BADGE | BEST MENTOR BADGE

MVP | BEST MENTOR BADGE

CYBER12

Careers Preparation National Center

# Key Takeaways

AI Driven Learning

Real-time adaptation

Ethical reasoning

Immersive training

Micro-credentialing

AI replaces one-size

VR/AR enhances hands-on

AI simulates realpworl attack scenarios

*Thank you!*