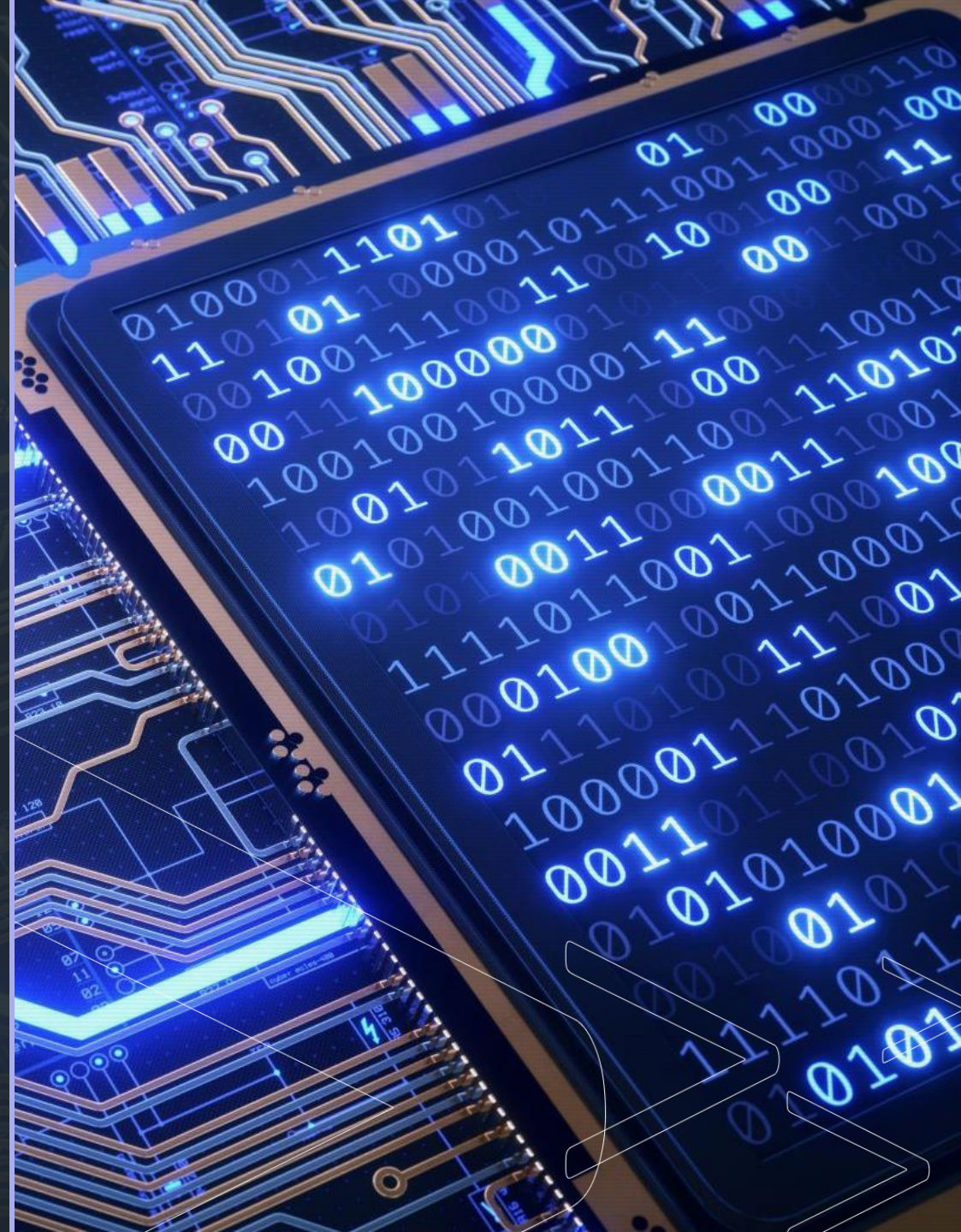# WiCyS: Intro to Cybersecurity and Cybersecurity Job Titles

Reminders

- Check in on GSP!

- Don't forget to join the WiCyS Slack!

Find the Slack invite link on our Facebook page, just click the "sign-up" button!

CHECK-IN

WOMEN IN CYBERSECURITY (WICYS)
GENERAL MEETING
THURSDAY, SEPTEMBER 10 AT 7:00PM

http://cglink.me/c79726997162954

1. **Open** the **CampusGroups** app.
2. Select '**The Grainger College of Engineering**'.
3. Click on QR Code scanner.
4. Scan this QR Code and you are checked-in!

Powered by CampusGroups

Cybersecurity: What is it?

Very broad umbrella for many subfields

Many different titles available

Not just stereotypical hacking

~11% women in the field

Some Basic Cybersecurity Terminology

- CTF: Capture-The-Flag
    - Participants solve puzzles or try to break into systems given to them
- Hats
    - White hat hacker: hacks to expose vulnerabilities so that they can be patched
    - Grey hat hacker: may violate laws or break rules, but not for unethical reasons
    - Black hat hacker: breaks into computer systems for unethical reasons
- Teams
    - Red team: hired to break into a system, considered outside of an organization
    - Blue team: focuses on defending a system from red teams

Cybersecurity Conferences!

- Most famous conferences are DEFCON, Black Hat

  - Both usually held in Las Vegas in August

  - DEFCON is more traditionally hacker-y

  - Black Hat is a bit more professional

  - Both have many interesting talks

- ACM/IEEE research conferences held for topics such as networks, HCI, etc.

- Women in Cybersecurity annual conference

  - Students must apply to receive a scholarship to attend, pay $40 to register

  - Better than GHC for networking because it has 3k attendees instead of 20k+

How to Get a Cybersecurity Internship?

- Apply to as many places as possible

- Slide into recruiter DMs

- Study for interviews/build up a great resume

  - Build side projects

  - Try CTF practice!

  - Understand basic data structures

  - Understand general computing concepts such as networks, architectures, operating systems

Some Common Titles

Security Engineer: Building secure systems; could be hardware or software focused

Network Engineer: Building and maintaining secure networks

Security Consultant: Consult for different companies to improve their security practices

System Administrator/DevOps/Security Analyst: Similarly to network engineering, though may involve securing overall systems

Security Researcher: Research new vulnerabilities, novel security techniques, etc.

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WARNING: there is no standard title; specific roles may change by company
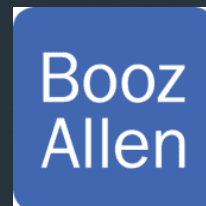
Security Engineer

- Usually, apply to Software Engineering internship position and hope to be matched with a security team

- Interviews: expect typical technical interviewing/Leetcoding

- Example companies:

    - Tech companies - Microsoft, Google, Facebook

    - Literally anything involving finance – banks, brokers, the Federal Reserve

   - Hardware companies – Nvidia, Apple, Intel

Security Analyst

- Not as much programming as security engineers

- Involves more manual checking for potential vulnerabilities, ensuring compliance with company security policies

- Interviewing: could be Leetcode or trivia questions

- Example companies:

  - Anything that wants to secure...anything

  - Booz Allen Hamilton, CrowdStrike

Network Engineer

- Similar to security analysts, with focus on network security/setup

- Interviewing: expect questions about the network stack

- Example companies:

  - Cisco, Huawei

  - T-Mobile, Verizon, AT&T

  - Research institutes; for example, National Center for Supercomputing Applications sent network engineers to South America recently to help set up a big telescope
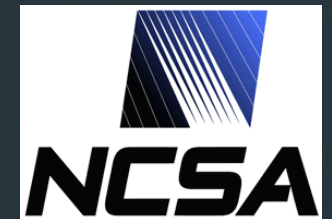
Security Consulting

- Could have more business flavor than other roles (but, be warned, sometimes ends up being software development)

- For example, a company might want help with improving their personnel access policy

- Interview: expect case interviews

- Example companies:

  - Big 4 of consulting

  - Other consulting firms, such as West Monroe, Grant Thorton

Security Researcher

- Specific area can vary; some search for vulnerabilities or develop secure technologies

- Interviews: could be coding or discussion of past research experiences

- Companies

  - National laboratories: Sandia National Labs, Pacific Northwest National Laboratory, MIT Lincoln Laboratory, MITRE

  - Universities: look for security REUs or positions at specific campus groups such as National Center for Supercomputing Applications
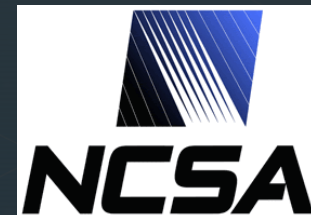
Being a Classic Hacker?

- [redacted]

- Interviews: usually not going to be Leetcode; the hard part is obtaining security clearance

- Programs such as SFS, DoD SMART scholarship offer to pay your tuition and match you with a government job in exchange

- Example companies:

  - US Government: FBI, NSA, etc.

  - Federal contractors

  - Any nation that uses computers

Relevant Skills

- Being comfortable in a Linux environment

- Knowledge of the network stack, how to use Wireshark (or any other network traffic monitoring tool)

- Knowledge of computer architecture, operating systems

- Low-level languages

- Object-oriented programming

- ...and a lot more!

A Side Note on Certifications

- Some people or companies want to see certifications for security

- If you want a certification, then go for it!

  - If you have a computer science degree, certifications aren't very important

  - Certifications are a great way for non-technical majors or applicants without a degree to show they have sufficient security knowledge

Interested?

Attend future meetings!

Try CTFs on your own if it interests you

Prepare for interviews

Pick 1 role type and start applying ASAP

Interview + Recruitment Tips!

To get an interview

- Introduce yourself to recruiters

    - Try to find UIUC campus recruiters, though any general university recruiter could probably help

    - Let them know when you have other deadlines/offers

    - Especially for research positions, it's likely you could get a job position by networking with full-time staff

        - For example: if you find an interesting paper, email the primary author

To Prep for Technical Interviews

- Practice Leetcode

  - Give it a serious try before checking the answer if you're stuck

  - Re-solve old questions to make sure you really understand the solution

  - Type in a Google Doc without a compiler to replicate whiteboard environment

  - Talk to yourself out loud while solving problems

- Brush up on basic theory/concept knowledge

  - Data structures, algorithm complexity

  - Web security/networking stack concepts, if the position expects them

To Prep for Behavioral Interviews

- Write down your answers to behavioral questions **in advance**

  - "Tell me about yourself"

  - "Tell me about a time you dealt with a team conflict"

- Read your resume, know which projects you would bring up if prompted about them

  - "Tell me about a project you're really proud of"

  - Remember the details; you don't want to stumble when asked how you implemented a certain feature

- **Be confident!**

To look for Security Opportunities

- **Look up companies of interest, find out their internship timelines**

    - For example: some PwC summer 2021 internships opened in 2020 spring

    - Meanwhile, national labs can make decisions a few months before start dates

- **Get started with on-campus or Research Park IT/security positions**

- **Email security professors about their research labs**

- **Apply for companies on WiCyS sponsor list**

    - Being a sponsor tends to mean a) they want more security roles filled and b) they want these roles to be filled by diverse candidates

    - If you're a national member, check for jobs on Job Board++

    - Attend WiCyS career fairs!