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Another Brick in the Wall: An Exploratory Analysis of Digital Forensics Programs in the United States

By:

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Stella is a gradute student working towards her degree in Cybersecurity & Networks. Her bachelor's degree was in Clinical Psychology.

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Ebere completed her graduate degree at the university in Cybersecurity & Networks. She holds a bachelor's degree in computer science and has worked on cybersecurity research with UNHcFREG.

Ibrahim Baggili Ph.D.

Dr. Baggili is the founding director of the Connecticut Institute of Technology at the University of New Haven. Additionally, he leads the research team (UNHcFREG) on campus.

- Introduction
- Methodology
- Discussion
- Conclusion
- Future Work

Outline

"The diversity and abundance of emerging programs in the U.S. related to cybersecurity and digital forensics makes it imperative to conduct a meta-analysis of the state of curricula to gain deeper insight into their similarities and differences."

-Ibrahim Baggili, Ph.D.

Contributions

Our work provides a primary analysis on (n=97) degree programs in the U.S. related to digital forensics.

Our work explores courses taught in already designated NSA-CAE programs, FEPAC, CDFAE programs to shed light on what courses exist and what courses are missing.

Our work presents a necessary update for academia, to explore both adequacy and deficiencies in digital forensic curricula course content.

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Methodology

- All universities were chosen based on online searches, similar to those that would be made by prospective students

- Ninety-seven degree (n=97) programs in the United States were chosen for this study

- To create the data set, the seven knowledge domains outlined by the Department of Defense Cyber Crime Center were used

- In addition, fifteen courses were chosen based on their importance in the digital forensics field today

- Data was only gathered from universities that have digital forensic degree programs or those which had digital forensics courses offered as part of other cyber related degrees
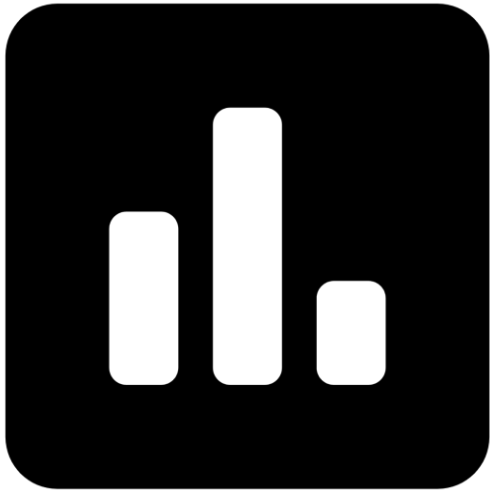
Curriculum

Knowledge Domains

1. Investigative Processes
2. Lab & Forensic Operations
3. Legal and Ethics
4. Network Forensics
5. Program & Software Forensics
6. Quality Assurance, Control & Management
7. Storage Media

Remaining courses analyzed

1. Advanced C/C++
2. Assembly Programming
3. C/C++
4. Disk Forensics
5. Ethical Hacking
6. File System
7. Hardware Security
8. Introductory Programming
9. IoT Forensics (Internet of Things)
10. Java
11. Malware and Software Analysis
12. Memory Forensics
13. Mobile Forensics
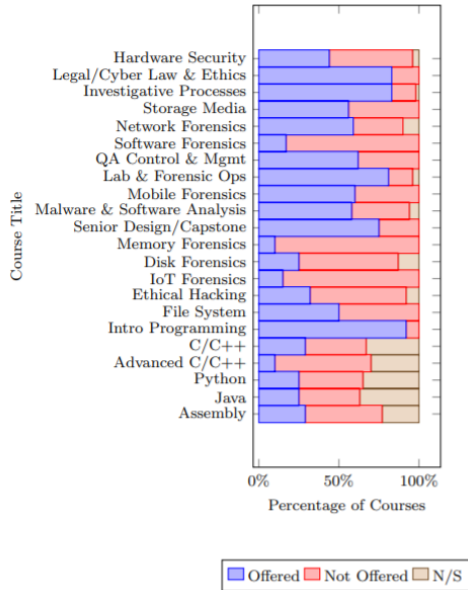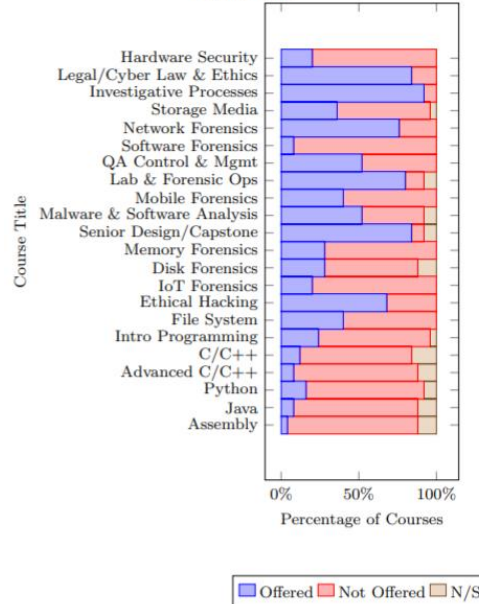14. Python
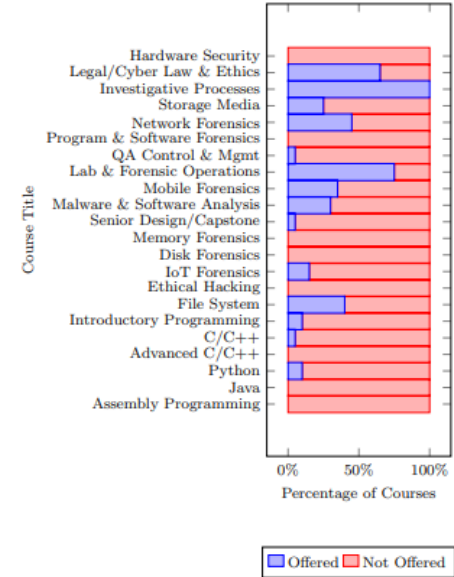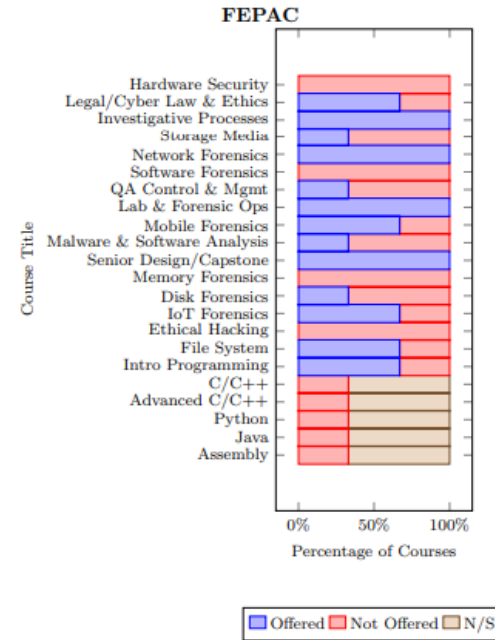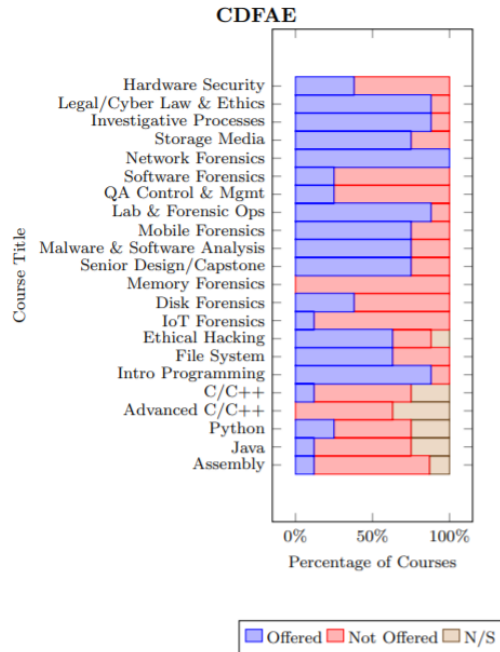15. Senior Design/Capstone

Results

Percentage of courses

Undergraduate

Graduate

Certificates

Percentage of courses

CDFAE — Percentage of Courses by Course Title (Offered, Not Offered, N/S)

FEPAC — Percentage of Courses by Course Title (Offered, Not Offered, N/S)

Private v.s. Public Academic Institutions

Comparison of undergraduate institutions
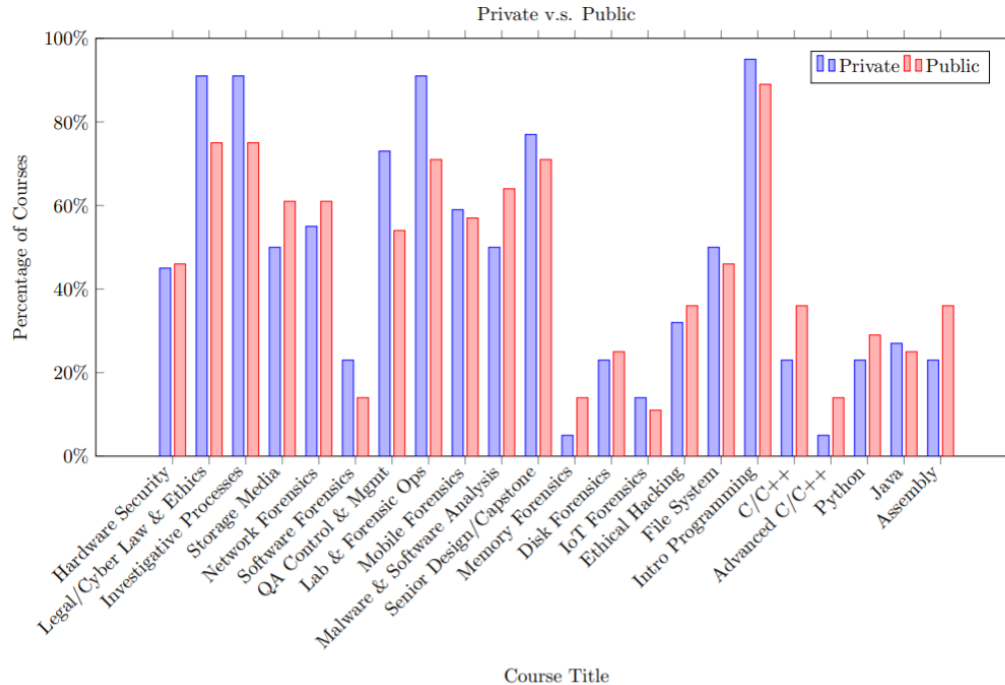
Discussion

- Standardization and updated course curricula are necessary to properly prepare students for the workforce.

- Integration of modernized security and forensics courses.

- There is no uniformity in which colleges within a university offer digital forensics and related degrees

Conclusion & Future Work

- We found that investigative processes, lab & forensic operations, and legal & ethics courses appeared the most in the online course catalogs.

- Most universities did not offer a memory or IoT forensics course.

- Public and private institutions seem to be alike when compared resulting in no significant difference between the two.

- Universities need to take a deeper technical approach to digital forensics education, and to keep up with technological changes.

- Future work should explore conducting surveys and interviews to explore the similarities and differences between what is taught and what is available in course catalogs.

Credits

Thank you!

Hope you enjoyed this presentation!

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- Tiffanie Edwards

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