Gamified Digital Forensics
Course Modules for Undergraduates

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Agenda

- Challenges in Digital Forensics Education
- Interactive Game Based Learning
- Modular-based Game Design
- Adaptivity of our Game and Game Creator
- Demonstrate the Game Engine and Game Creator
Challenges in Digital Forensics Education

- We need to produce qualified forensics technicians and professionals to meet workforce demand.
- Digital forensic science courses should be taught earlier to attract talented students.
- Due to long pre-requisite chains, Digital forensic courses:
  - have a limited content taught in community colleges.
  - are targeted primarily to upper-level students in four-year colleges.

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Interactive Game Based Learning

- Enable first year student to learn basic digital forensics concepts with intuitive design and interactive dialogs in games.
- Enhance the breadth and depth of forensics course material with multilevel modular designs.
- Keep students interested and engaged in forensics field earlier.
- Develop students skills with real forensics tools and technologies.
- Can be replicated and adopted by other science programs.
Digital Forensics

- "The use of science and technology to investigate and establish facts in criminal or civil courts of law".  
  - From Dictionary.com

- "Gathering and analyzing data in a manner as free from distortion or bias as possible to reconstruct data or what has happened in the past on a system"  
  - Farmer and Venema, 1999
Digital Forensics (Con’t)

- Investigation of a suspected crime scene to determine what happened
- It involves
  - Image/Collect data in a forensically sound manner
  - Preserve the evidence
  - Analyze (who, what, when, where, how and why)
  - Report / Present admissible evidence in court
Module-based Game Design

- **Level 100**
  - Introduction to digital forensics

- **Level 200**
  - Linux/Unix forensics
  - Windows forensics
  - Network forensics

- **Each Module includes one or more games**
  - **Built in Games**
    - Storyline, lab images/tools/questions/answers, resources, module evaluation

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Adaptivity of our Game and Game Creator

- Developed by RIT student Ryan McGlinn, School of Interactive Games and Media
- Microsoft Windows Presentation Foundation (WPF)
  - For developing Game Interface
- XAML and XML to define and link interface elements
  - Need NOT touch the game engine
- Only need to provide XML files
  - for different modules
  - Even for different courses other than digital forensics
Game Interface
Using WPF for IPAR game
Game Editor to Generate a Case

IPAR Editor can be used to easily build entire cases.

Parameters are automatically converted to formatted XML.

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Demo of the game
Suggestions and Questions

Thank You!!!

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