Currently: visiting professor, George Mason University

BSc in CS, TCNJ (2002)
PhD, MSc in CS, Columbia University (04,08)
Postdoc, Dartmouth College ISTS

Research: Intrusion defense
URL: www.cs.gmu.edu/~mlocasto
Our goal was to create a program that nurtures student’s curiosity and appreciation of the different facets of information security

- Technical (labs, seminar)
- Professional (internships)
- Research (mentored research)

Why am I here?
SISMAT 2008 Participants
What?

- An intensive undergraduate cybersecurity program involving education, practical experience, and research

- We teach a variety of topics
  - Hacking tools, program analysis, PKI, OS kernel code, x86 assembly, network protocols and traffic analysis, security management
  - The “Hacker Curriculum”
When?

- SISMAT Seminar: June 22 to July 2
- Internship: typically July & August
- Mentored Research: typically Fall semester following SISMAT seminar
- Application deadline: Feb 15
Who?

- Cybersecurity experts from Dartmouth, GMU, and our colleagues

- You! Approximately 10..12 undergraduates from colleges around the country (mostly concentrated in mid-Atlantic and New England regions)

- Faculty mentors
We’re looking for responsible, talented, creative, and inquisitive students

Attitude and desire are more important than grades (although good grades help with internship placement)
Outcomes / FAQs

- Cost: free (to you)
- Internship experience / practical skills
- Training / resume builder
- Research projects, research papers (helpful for grad school applications)
- US Citizens with cybersecurity expertise are in (very) high demand by NSA & DHS
- Dress: casual (for seminar), individual internships vary
Each day structured such that:
- Two morning “lectures” or a guest speaker
- Two afternoon labs

Guest Speakers
- Doug, Scout, Scott Rea, C. Shepherd (NSA), J. Marchesini

Agenda/Syllabus/Curriculum
- Maintained dynamically on a wiki
- Links to readings, points that came up in “lecture”, and extra help / Web sites for labs
The STUDENTS

- Small group, bright, exceptional, motivated
- John Marchesini
  - Multiple days, extra expert & pair of hands
  - Author of one of the texts
- Discussion of ethics on the last day

Professional Development Weekend
SISMAT 2009 Students
Professional Development Weekend

- Invite & host faculty mentors
- Brainstorm ways to help weave in and deliver information security content in “regular” courses
- Set agendas for mentored research projects
- Lay groundwork for future recruiting
Lab Exercise Highlights

- SQL/HTML Injection
- OpenSSL “roll-your-own-CA”
- Forging and digitally signing email
- Detailed analysis of a real, extensive intrusion
- Authorization policy in Unix
- Debugging and analysis of libpng and nullhttpd vulnerabilities (gdb, working shellcode, etc.)
Research Projects

- Rootkit design and analysis
- Variable Armor (automatically sandboxing data structures)
- Security systems interaction
- HealthIT Security & Access Control
- Intrusion recovery planning
- Student “red teams” / security user education
- Many more…
How to Apply

- Send to sismat@cs.dartmouth.edu:
  - Unofficial transcript
  - Resume / CV (get advice/review)
  - 1..2 page statement of interest in security
  - Letter of support from faculty mentor (separate cover)
  - Contact information / Citizenship status

1/26/10 M. Locasto