

Jacob Shin

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Education

Temple University (College of Science and Technology)

Expected to Graduate May 2024

- Bachelor of Science, Computer Science • Honors Program
- President's Scholar: Covers Full-Tuition (\$20,000/yr) • Temple Science Scholar
- Courses: Introduction to Academic Computer Science, Mathematical Concepts in Computing I Honors

Experience

Princeton Plasma Physics Laboratory (PPPL) Intern (October 2019 - December 2019)

- Learned to design an electronic circuit for a device called a Langmuir probe, an instrument used to measure properties like density and temperature of plasmas

Projects

TI-Authenticator: 2FA With a Calculator (C, HMAC, SHA1, OTP)

- Provides rolling passcodes similar to Google Authenticator except on a graphing calculator
- Implements One-Time Password (OTP) algorithms for the TI-84+ CE graphing calculator based on [RFC 4226](#) (HOTP) and [RFC 6238](#) (TOTP)

MITRE Embedded Security Challenge 2017 (C, AES, AVR)

- Designed a bootloader for "Secure Firmware Distribution for Automotive Control" using an Atmega1284p microcontroller using HMAC verification and AES-CBC encryption.
- Attacked other bootloaders from other teams by dumping flash via JTAG (after finding out that fuse bits were incorrectly setup)
- Learned about brownout attacks and side channel attacks

Calculator Controlled RC Boat (C++, TI-BASIC, Arduino)

- Allows a graphing calculator to wirelessly control a boat
- Utilizes an Arduino and RF wireless modules with a C++ library called ArTICL to interface with a TI-84+ graphing calculator

Skills

Programming Languages: C, C++, Python, Javascript, x86 ASM

Markup Languages: \LaTeX , Markdown, HTML, CSS

Other: Linux, Bash, Git/Github, Tmux, (Neo)vim, REST APIs, Ghidra, GDB, Binary Exploitation, Reverse Engineering

Awards/Activities

4th Place: RACTF 2020 Computer Security Competition

1st Place: castorsCTF20 Computer Security Competition

Member: Temple Association for Computing Machinery (ACM)