

## JOEY PABALINAS

[Phone]: (808) 741-8896

[Email]: [joeypabalinas@gmail.com](mailto:joeypabalinas@gmail.com)

[Projects]: <https://github.com/alyptik>

[Blog]: <https://alyptik.org>

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### SYSTEMS SOFTWARE ENGINEER (C PREFERENCE)

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#### **EXPERIENCE**

- **NYU Secure Systems Research Lab:** Developer (June 2018 – Current)<sup>[1]</sup>
  - **Lind:** Single-process sandbox to isolate programs from host systems (fork of Google's **NaCl**).
    - Responsible for userspace emulation of kernel functions and modification of glibc.
    - Fixed errors in build system and refactored large part of the code base.
    - Designed pthreads-based emulations of the Linux's fork(2), pipe(2), and execve(2) that allow for programs not originally intended to run inside of NaCl, such as the bash shell, to work just as well as on a host system.
  - **CrashSimulator:** System call error injection and analysis (fork of Mozilla **rr**).
    - Responsible for code cleanup and linting, as well as general C-related development.
    - Ported builds from 32-bit to 64-bit by fixing assumptions made by Python modules and C++ code.
    - Helped implement portions of strace as both shared and static libraries used by our fork of rr.

#### **CONTRIBUTIONS**

- **Zsh:** Command-line terminal shell.
  - Contributed fix for the [CVE-2018-7548](#) security vulnerability.<sup>[2][3][4]</sup>
- **Linux Kernel:** Free OS kernel used in many web servers/Android phones.
  - Active contributor on the Linux Kernel Mailing List.<sup>[5]</sup>
  - Reduced fragility of tag generation script.<sup>[6]</sup>
  - Refactored and cleaned up Nozomi TTY driver.<sup>[7]</sup>
- **WeeChat:** Extensible IRC client.
  - Contributed CMake fix for split ncurses and tinfo breaking builds.<sup>[8]</sup>
- **Mixxx:** Open-source, cross-platform DJ software.

- Contributed patch for Chromaprint library API change handling.<sup>[9]</sup>

## **PROJECTS**

- **CEPL (Founder):** C11 read-eval-print loop (REPL).<sup>[10]</sup>
  - Uses GNU Readline/History for command history and incremental undo.
  - Uses LibELF to generate tab completions for shared library functions.
  - Supports Intel & ATT assembler and C source code output.

[1] <https://ssl.engineering.nyu.edu/people>

[2] <https://nvd.nist.gov/vuln/detail/CVE-2018-7548>

[3] <https://security.archlinux.org/CVE-2018-7548>

[4] <https://sourceforge.net/p/zsh/code/ci/110b13e1090bc31ac1352b28adc2d02b6d25a102>

[5] [https://lore.kernel.org/patchwork/project/lkml/list/?submitter=23411&archive=both&state=\\*](https://lore.kernel.org/patchwork/project/lkml/list/?submitter=23411&archive=both&state=*)

[6] <https://lore.kernel.org/patchwork/patch/907517/>

[7] <https://github.com/torvalds/linux/commit/2ea0452c5a222be7f581d8cd48058ee6472d1449>

[8] <https://github.com/weechat/weechat/pull/1090>

[9] <https://github.com/mixxxdj/mixxx/pull/1073>

[10] <https://github.com/alyptik/cepl>

## **EDUCATION**

- 2017 — A.A. in Liberal Arts, Leeward Community College.
  - Took courses in Ethics and Women's Studies to familiarize myself with unfamiliar social issues.
  - Took Maths courses up to Calculus and possess satisfactory aptitude in topics up to that point, as well as other branches of Maths such as modular arithmetic which are essential to many cryptographic and hash-based systems.
  - Took Boolean Algebra and would consider self fairly proficient in reasoning about logic-based systems in an abstract manner.
  - Took basic Economics to have a basic foundation towards understanding the general nature of businesses and monetary systems in both macro and micro contexts.

## **REFERENCES**

- Available upon request.