Scott Mathog
(626)-726-7853

smathog@gmail.com **||** linkedin.com/in/scott-mathog **||** github.com/smathog

Education
University of California, Los Angeles
Bachelor of Science, Mathematics
Major GPA: 3.82 **||** Cumulative GPA: 3.63

Skills
- **Languages:** Rust, C++ (including Modern C++ up to C++20), Java, Python, SQL (SQLite)
- **Frameworks:** Android, Spring (Spring Boot), Qt, Hibernate ORM, Selenium
- **IDEs:** Microsoft Visual Studio, Microsoft Visual Studio Code, Intellij IDEA, PyCharm, CLion, Android Studio, Qt Creator
- **Other Tools:** Linux (Ubuntu), Git, Excel

Projects
- **HeartAlarm –** An Android app which uses the Polar SDK to monitor, display, and record heart rate and ECG.
  - Built with Android, Java, SQLite, and the Polar SDK.
  - Real-time monitoring and visualization capability of time-series data provided by the open source GraphView library.
  - Capable of continuously recording heart rate and ECG for later viewing by utilizing Android's SQLite interface.
  - Triggers audible alarms when heart rate is outside user-defined limits.
- **invoke_impl -** A Rust procedural macro library that helps automate the task of invoking callables with identical signatures.
  - Written in Rust using the syn and quote crates.
  - Code generation through procedural macros offers superior performance potential and maintainability as well as better compatibility with generics than more traditional alternatives such as the command pattern.
- **EMSim -** A simulator that measures how various election methods perform.
  - Written in Rust using the enum_dispatch crate and my invoke_impl crate.
  - Use of enum_dispatch for static dispatch determined at compile-time allows for greater execution speed over runtime virtual dispatch with little additional complexity in terms of code maintainability.
- **Digit Recognition -** A Java program that can recognize handwritten digits.
  - Written using only standard Java libraries to demonstrate understanding of deep learning principles by using backpropagation with an artificial neural network.
  - Training done using the MNIST database of images of handwritten digits.
  - Allows the user to experiment with various ANN architectures and utilizes Java's builtin serialization capabilities to permit the saving and reuse of trained models.
- **COVID Vaccine Availability Alert -** A Python script that monitors a local pharmacy website for vaccine appointment availability.
  - Written using Python with the Selenium framework.
  - Automatically scrapes the target site on a designated schedule, looking for open appointments by parsing the page HTML/CSS for specific terms.
  - Issues an audible alert through speakers when an appointment is detected.
- **JSON - XML Converter -** A Java application to convert back and forth between JSON and XML.
  - Takes in file input containing either JSON or XML, parses and converts into an intermediate form, and converts this back into the other format.
- **Tetris -** A clone of the classic game Tetris, playable in a command terminal.
  - Written using Python and Numpy.
  - Uses Numpy to handle matrix transformations (namely rotations) of the matrix representations of the various legal Tetris shapes.

Additional
- Completed 68 Projects (https://github.com/smathog/Hyperskill-Projects) and 5 Tracks with a focus on Java and Python on Jetbrains Academy.
- Performed considerable mechanical work on a 1991 Ford F53 chassis Fleetwood Bounder Motorhome which included overcoming significant diagnostic challenges.