Emily Sillars

ems2331@columbia.edu | (413) 336 - 6870
www.linkedin.com/in/emilysillars | emilysillars.github.io

EDUCATION

Columbia University: Fu Foundation School of Engineering　　　　　　　　　　　　New York, NY
M.S. in Computer Science　　　　　　　　　　　　May 2023
- GPA: 3.737
- Courses: Operating Systems, Advanced Software Engineering, TLC (Types, Languages, Compilers)

New York University: Tandon School of Engineering　　　　　　　　　　　　Brooklyn, NY
B.S. in Computer Science, Minor in Game Design　　　　　　　　　　　　Jan 2021
- Magna Cum Laude, recipient of the Josh Goldfaden Award and Founders Day Award
- Courses: Unix Programming, Compiler Design and Construction, Design and Implementation of Programming Languages

The Center for Cartoon Studies　　　　　　　　　　　　White River Junction, VT
One Year Certificate in Cartooning　　　　　　　　　　　　May 2016
- A program covering all aspects of the creation and dissemination of comics, graphic novels and other visual narrative forms

PROFESSIONAL EXPERIENCE

Geopipe　　　　　　　　　　　　New York, NY
Research & Development Intern　　　　　　　　　　　　Jun 2022 - Aug 2022
- Used Racket and C++ to update and complete a three-year-old visualizer project for Geopipe's in-house DSL.
- Documented, fixed, updated, and enhanced DSL related regression tests; caught and fixed a bug in DAE file generation
- Communicated with supervisor daily over slack message and video call; reported progress to a seventeen-person team at bi-weekly sprint meetings
- Prepared and delivered an 8-minute presentation on Geopipe's in-house DSL at the Intern Showcase

Unity Development Intern　　　　　　　　　　　　Jun 2020 - Aug 2020
- Resolved three bugs in Geopipe's Unity plug-in and expanded documentation on its functionality
- Developed a 3D game demo featuring Geopipe's 3D city models using Unity with C#
- Communicated with supervisor clearly over slack message and video call, defined SMART goals and presented progress to a ten-person team at weekly stand-up meetings

RESEARCH AND PROJECTS

Columbia University: Fu Foundation School of Engineering　　　　　　　　　　　　New York, NY
TLC Project: JambaJuice (a small, functional language with modular type inference)　　　　　　　　　　　　Jan 2023 – May 2023
- Created the JambaJuice language (interpreted with Haskell; features a Hindley-Milner based type system extended with recursion) and a modular Hindley-Milner typing constraint generator and solver (implemented as a Haskell library)
- Our Haskell library, *PLCgen* (short for Prolog Constraint Generation) works in conjunction with our JambaJuice interpreter as a proof of concept for modular type inference; under the hood, it translates typing constraints into Prolog, then queries an SWI Prolog process to obtain its results.
- Collaborated with project partner on language and library design, and completed 80% of project implementation during pair programming sessions.

Research Team Member: SSLANG (Sparse Synchronous Language)　　　　　　　　　　　　Sep 2021 – May 2023
- Contributed to the development of Edwards' and Hui's SSLANG compiler.
- Collaborated with research partner to investigate and adapt parts of GHC's inlining strategy for SSLANG; added a static inlining optimization pass to the SSLANG compiler, written in Haskell
- Supervised five team members' projects: hosted meetings twice a week, provided guidance, next steps, and reviewed code
- Added partial application of data constructors to the compiler; enhanced compiler's IR pretty printer
- Added algebraic data types to the SSLANG code generator, producing C code that links with the runtime system

TEACHING

Columbia University: Fu Foundation School of Engineering　　　　　　　　　　　　New York, NY
Teaching Assistant: Types, Languages, Compilers (TLC)　　　　　　　　　　　　Jan 2022 – May 2023
Teaching Assistant: Parallel Functional Programming (PFP)　　　　　　　　　　　　Sep 2022 – Dec 2022
New York University: Tandon School of Engineering　　　　　　　　　　　　Brooklyn, NY
Head Teaching Assistant: Introduction to Operating Systems　　　　　　　　　　　　Sep 2020 - Dec 2020
Teaching Assistant: Introduction to Operating Systems　　　　　　　　　　　　Sep 2019 - May 2020

SKILLS

Programming: C, C++, Unity Game Engine, C#, Java, Haskell, Racket, OCaml, Prolog
Web Development: HTML, CSS, JavaScript, jQuery, Bootstrap framework
Graphic Design: Adobe Photoshop, Adobe InDesign, Adobe Illustrator