Joomy Korkut[1] [2]

New York, NY, USA.
(203) 928-8640

http://joomy.korkutblech.com
joomy@type.systems

Research Interests

Compilers, type systems, formal verification, metaprogramming, symbolic natural language processing.

Education

- **Princeton University**, Princeton, NJ.
  - **Ph.D.**, *Computer Science*. September 2018 - (ongoing, expected January 2024)
    Thesis: *Foreign Function Verification Through Metaprogramming*. Adviser: *Andrew W. Appel*.
  - **M.A.**, *Computer Science*. March 2023
- **Wesleyan University**, Middletown, CT.
  - **M.A.**, *Computer Science*. September 2017 - May 2018
    Thesis: *Edit-Time Tactics in Idris*. Adviser: *Daniel R. Licata*.
  - **B.A.**, *Computer Science* (with honors) and *Mathematics*. September 2013 - May 2017

Work and Research Experience

- **Applied Scientist Intern**, Amazon Web Services, New York, NY. (May - August 2022)
  Worked with Ankush Das on lightweight verification of communication protocols in distributed systems, for a randomized testing tool in Rust.
- **Preceptor**, Princeton University (September 2019 - December 2022)
  Graded assignments, led precepts (recitations), held office hours for the following courses:
  - COS 326 - Functional Programming. (Fall 2019, Fall 2020 as head preceptor, Fall 2022)
- **Software Engineering Intern**, Awake Security, Sunnyvale, CA. (July - September 2018)
  Worked with Jeff Polakow, contributed to the design of a functional programming language with row polymorphism for network queries and its implementation in Haskell.
- **Student Forum Leader**, Wesleyan University (Fall 2015, Spring 2018)
  Designed and taught a course on Haskell for credit, under the supervision of Prof. James Lipton.
- **Research in the Sciences Fellow**, Wesleyan University (May - August 2015, May - August 2016)
  Formalized the correctness and termination proofs of a regular expression matching algorithm using continuation passing style, in Agda. Formalized the compilation of the modal logic based functional language, in Agda. Under the supervision of Prof. Daniel R. Licata.
- **Course Assistant**, Wesleyan University (September 2014 - May 2018)
  Graded assignments, led tutor sessions, and occasionally gave lectures for the following courses:
  - COMP 115 - How to Design Programs. (Fall 2017, Spring 2018)
  - COMP 212 - Computer Science II. (Fall 2014, Spring 2015)
  - COMP 321 - Design of Programming Languages. (Fall 2015, Fall 2016, Fall 2017 (1 lecture))
  - COMP 360-01 - Computer-Checked Programs and Proofs (Spring 2016)
  - COMP 360-02 - Automated Theorem Proving (Spring 2016 (4 lectures))
- **Programming Specialist**, Instructional Media Services, Wesleyan University (September 2013 - May 2015)
  Developed a calendar for staffing campus events with AV technicians.

[1] Legal name: Cumhur Korkut.
[2] I am a U.S. permanent resident, therefore I am authorized to work in the U.S. and will not need sponsorship in the future.

Skills

- Functional programming (Haskell, Standard ML, OCaml, etc.)
- Web development (JavaScript / TypeScript, HTML, CSS etc.)
- Interactive theorem proving (Coq, Agda, Idris etc.)
- Other: Rust, C, Python, Prolog, LaTeX.

Publications and Academic Writing

- *A Proof Tree Builder for Sequent Calculus and Hoare Logic*, International Workshop on Theorem Proving Components for Educational Software. Haifa, Israel. (remote) (August 11th, 2022)
- *Direct Reflection for Free!*, International Conference on Functional Programming (Student Research Competition, Graduate Category, 3rd place), Berlin, Germany (August 20th, 2019)
- *Commanding Emacs from Coq*, Scheme Workshop, Berlin, Germany (August 18th, 2019)
- *Morphology and Lexicon-based Machine Translation of Ottoman Turkish to Modern Turkish.* Self-published, 2019.
- *Direct Reflection for Free!*, New York Seminar of Programming Languages and Software Engineering, CUNY Hunter College (February 25th, 2019)
- *Extensible Type-Directed Editing*, joint work with David Thrane Christiansen. Type-Driven Development Workshop. (September 27th, 2018)
- *Edit-Time Tactics in Idris.* Master's thesis, 2018.
- *Thinking Outside the □: Verified Compilation of ML5 to JavaScript.* Undergraduate thesis, 2018.
- *Intro to Interactive Theorem Proving*, Graduate Student Series, Wesleyan University. (October 5th, 2017)
- *Intrinsic Verification of a Regular Expression Matcher.* joint work with Maksim Trifunovski and Daniel R. Licata. Self-published, 2016.

Talks

- *Foreign Function Verification Between Coq and C Through Metaprogramming*, Harvard Programming Languages Seminar. Boston, MA. (March 23rd, 2023)
- *Ergonomics and Verification of a Foreign Function Interface between Coq and C*, general exam talk at Princeton University (May 14th, 2020)
- *Direct Reflection for Free!*, International Conference on Functional Programming (Student Research Competition, Graduate Category, 3rd place), Berlin, Germany (August 20th, 2019)
- *Commanding Emacs from Coq*, Scheme Workshop, Berlin, Germany (August 18th, 2019)
- *Direct Reflection for Free!*, New York Seminar of Programming Languages and Software Engineering, CUNY Hunter College (February 25th, 2019)
- *Intro to Interactive Theorem Proving*, Graduate Student Series in Mathematics, Wesleyan University. (October 5th, 2017)

Service

- Object-Oriented Programming, Systems, Languages & Applications (OOPSLA) conference, Artifact Evaluation Committee, 2024.
- International Conference on Functional Programming (ICFP), Artifact Evaluation Committee, 2023.
- International Conference on Verification, Model Checking, and Abstract Interpretation, (VMCAI) Artifact Evaluation Committee, 2023, 2024.

Last updated on December 26, 2023