📞 *+1 812 272 99 68*
✉ *cderici at indiana.edu*

Caner Derici

Computer Science PhD Candidate

http://cderici.github.io

Education

2015–[2020]   **PhD**, *Indiana University*, Computer Science, IN, USA.
Working on operational semantics and fast evaluation of functional PLs. Contributing to Racket [1]. Developed and maintained Pycket since 2016. (see Projects)
Minor: Logic, Advisor: Sam Tobin-Hochstadt

2014–2015   **PhD**, *Boğaziçi University*, Computer Engineering, [Dropped out].
Continuation of my masters. Dropped out to pursue a PhD on PL.

2011–2014   **MSc**, *Boğaziçi University*, Computer Engineering, Istanbul, Turkey.
Studied Automated Theorem Proving, Machine Learning and Natural Language Processing. For my thesis work, I built a question answering system for high-school students in Turkey. [2, 3, 4] (see Projects)

2005–2010   **BSc**, *Istanbul Bilgi University*, Computer Science, Istanbul, Turkey.
Studied CS theory and programming language theory & implementation. [5] For my thesis work I added tail-call elimination to the Racket-to-JavaScript compiler developed at Brown university.

Selected Projects

2016 - Current   **Pycket**, *A self-hosting tracing JIT runtime for Racket, generated using the RPython (Restricted Python) framework.*
Implemented linklets in RPython, and developed and maintained the runtime primitives and data structures (hash tables, structs, continuations etc.) to make it possible for Racket to self-bootstrap on Pycket. [http://www.github.com/pycket/pycket]

2016   **Rax**, *A full-stack nanopass compiler from a small subset of Racket to x86_64 assembly.*
Started for fun, turned into a school project. It was a two people collaboration. Built and tested all the passes (e.g. closure conversion, register allocation, code-gen, etc.). [https://github.com/cderici/rax]

2013 - 2015   **HazırCevap**, *A closed domain question answering system for high school students..*
Funded by TUBITAK. I lead the research and development, 3 faculty members (both from CS and also School of Education) and 4 grad students were involved. This was my MSc thesis work, so I worked on pretty much everything about it. (see Publications)

2012   **FARS: Functional Automated Reasoning System**, *This is a resolution-refutation style automated theorem prover. I developed it for fun at first, then I turned it into a project for school. Written all in Racket by myself.*
[https://github.com/cderici/FARS]

2014   **Sessizliğe Oku [Read to Silence]**, *A joint project with the Department of Western Languages & Literatures to build a web-based application to teach people with hearing disability how to read.*
Two faculties trom Linguistics, one from CS, and two RAs were involved. Project aims to develop a stable framework on which the Turkish grammar lectures and exercises for *deaf* people can easily be provided. I collaborated with the linguists to implement the application (available on both PC and mobile) that's designed specifically for deaf people.

Publications

[1] Flatt M., Derici C., Dybvig R. K., Keep A. W., Massaccesi G. E., Spall S., Tobin-Hochstadt S., and Zeppieri J. "Rebuilding racket on chez scheme (experience report)". In: *Proceedings of the ACM on Programming Languages* 3.ICFP (2019), p. 78.

[2] Derici C., Aydın Y., Yenialaca Ç., Aydın N. Y., Kartal G., Özgür A., and Güngör T. "A closed-domain question answering framework using reliable resources to assist students". In: *Natural Language Engineering* 24.5 (2018), pp. 725–762. DOI: 10.1017/S1351324918000141.

[3] Derici C., Çelik K., Kutbay E., Aydın Y., Güngör T., Özgür A., and Kartal G. "Question analysis for a closed domain question answering system". In: *International Conference on Intelligent Text Processing and Computational Linguistics*. Springer. 2015, pp. 468–482.

[4] Derici C., Çelik K., Özgür A., Güngör T., Kutbay E., Aydın Y., and Kartal G. "Rule-based focus extraction in Turkish question answering systems". In: *2014 22nd Signal Processing and Communications Applications Conference (SIU)*. Apr. 2014, pp. 1604–1607. DOI: 10.1109/SIU.2014.6830551.

[5] Başar R. E., Derici C., and Şenol Ç. "World With Web". In: *Technical Report CPSLO-CSC-09-03* (), p. 121.

Experience

Teaching and Research

2015-2019 **Teaching & Research Assistant**, *Indiana University*, Bloomington, USA.
Taught the introduction to programming (in Racket) for 3 semester, and the domain specific language design and implementation for 1 semester.

2010-2013 **Teaching Assistant**, *Istanbul Bilgi University*, Istanbul.
Taught 6 semesters; Data Structures & Algorithms (in Java), Principles of Programming Languages (in Racket), Database Systems (with Data Mining)

2011 **Instructor**, *Nesin Math Village*, Şirince/Selçuk,İzmir, Turkey.
Taught Lambda Calculus to Math graduate students, and "Programming=Algebra" to high-school students with Chris Stephenson

2014 **Conference Reviewer**.
Reviewed two papers on statistical information retrieval for SIU2014, and a paper on question answering systems for COLING 2014

Miscellaneous

2013 **Product Development Specialist**, *Asseco South-Eastern Europe*, Istanbul.
Worked on developing the back-end of the virtual POS for banks. Used Java, Spring, Tomcat, Mercurial, Oracle

2013 **Hackathonist'14**, Istanbul.
Developed a Google Glass application (running on a mock glass API) that talks with the CitySDK, and enables the use of open city data provided by Istanbul Municipality for various smart city tasks (such as finding a suitable bus-route).

2011 **VII. International Conference on Webometrics, Informetrics and Scientometrics (WIS)**, Istanbul.
Lead the preparation and compilation of the Book of Abstracts and the Proceedings.

Natural Languages

Turkish ★★★★★ *Native*

English ★★★★½ *Lived in US since 2015. All the education was in English. Wrote 2 dissertations (BSc and MSc) and numerous publications in English.*

Programming Languages

Aside from implementing many small experimental languages myself, I have been using mostly the functional languages (including to implement other languages), However I also used and feel confident in using imperative languages as well.[1]

Racket/ Scheme/ LISP	★★★★★	*Programming and teaching in Racket since 2005, used it for both everyday programming and projects. (see the sections above)*
Python	★★★★★	*My entire PhD work (Pycket) is in RPython (restricted Python). Also my masters thesis work (information retrieval and natural language processing) was completely in Python (see HazırCevap project).*
Javascript	★★★★☆	*Implemented tail-calls and wrote some runtime support primitives for the Racket-to-Javascript compiler being used in https://www.wescheme.org/ for the Bootstrap curriculum.*
Java	★★★★☆	*Worked for a year for a software company that used Java to develop software (e.g. virtual point-of-sale) for financial institutions (e.g. banks). Correct & clean code as well as security were main focuses. Also developed toy mobile applications on Android for fun.*
C/C++	★★★☆☆	*Made some little games with OpenGL and studied some graphics programming. Also developed a mobile application on Samsung's Bada 1.0 platform.*
Misc.	★★☆☆☆	*At some point I've written code in; Go for fun, SQL for DB, MatLAB and R for statistical analysis, CSS for web etc.*

Skills

Technical

Linux	★★★★★	*Using linux on my PC everyday since 2005 (except for gaming).*
Git	★★★★★	*http://www.github.com/cderici*
LaTeX	★★★★☆	*Using since 2005 for all documents (including this one), e.g. my dissertations and papers.*
Emacs	★★★☆☆	*Not a power user, but I've been using it everyday since 2015.*

Personal

Electric Guitar & Music	★★★★☆	*I was a semi-professional musician, played in lots of rock bands since I was 12, managed music studios for 2 years. Made a decision to be a computer scientist instead. Now I make songs only for my wife. You can watch some of my guitar covers on YouTube.*
Fantasy Role Playing	★★★★★	*10 years of playing (and dungeon mastering) since my late teens to mid twenties (mostly D&D 3.5e and AD&D)*
Tango	★☆☆☆☆	*Took lessons for 6 months with my sister. I was terrible, but I liked it.*
Starcraft II	★★☆☆☆	*In Silver League with 3350 MMR. Improving very slowly (no time to play much).*

Awards & Scholarships

- Full Scholarship for BSc, Student Selection and Placement Center(OSYM), 2005-2010
- Research Scholarship for MSc (2 years), fully funded by TUBITAK
- Scholarship for a research project on teaching natural languages to hearing impaired. 2014. Funded by KOÇ Foundation.
- Best Band Performance & Second Best Composition at The Musical Contest among high schools in Antalya, Summer 2004

Last compiled on August 19, 2019

Stars (★) indicate my level of confidence.