

Caner Dericici

Computer Science PhD Candidate

<http://cderici.github.io>

Extended resume : <http://cderici.github.io/resume>

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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 - **Pycket**, *A self-hosting tracing JIT runtime for Racket, generated using the RPython (Restricted Python) framework.*
Current 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.). [FIXME: GITHUB LINK]
- 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 from 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 ★★★★★☆ *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	★★★★★	<i>Programming and teaching in Racket since 2005, used it for both everyday programming and projects. (see the sections above)</i>
Python	★★★★★	<i>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).</i>
Javascript	★★★★☆	<i>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.</i>
Java	★★★★☆	<i>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.</i>
C/C++	★★★★☆	<i>Made some little games with OpenGL and studied some graphics programming. Also developed a mobile application on Samsung's Bada 1.0 platform.</i>
Misc.	★★★☆☆	<i>At some point I've written code in; Go for fun, SQL for DB, MatLAB and R for statistical analysis, CSS for web etc.</i>

Skills

Technical

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

Personal

Electric Guitar & Music	★★★★☆	<i>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.</i>
Fantasy Role Playing	★★★★★	<i>10 years of playing (and dungeon mastering) since my late teens to mid twenties (mostly D&D 3.5e and AD&D)</i>
Tango	★★☆☆☆	<i>Took lessons for 6 months with my sister. I was terrible, but I liked it.</i>
Starcraft II	★★★☆☆	<i>In Silver League with 3350 MMR. Improving very slowly (no time to play much).</i>

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 14, 2019

Stars (★) indicate my level of confidence.