

Caner Dericici

Computer Science PhD Candidate

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Extended Resume

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 tracing JIT runtime for self-hosting Racket, generated using the RPython (Restricted Python) framework*.
Current Made Pycket a full implementation of Racket, 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*.
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) Funded by TUBITAK
- 2012 **FARS: Functional Automated Reasoning System**.
A resolution-refutation style automated theorem prover. I developed it for fun at first, then I turned it into a school project. 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*.
I was the main developer (web and mobile app). 2 faculties from Linguistics, 1 from CS, and 2 RAs were involved. It aimed to develop a stable framework on which the Turkish grammar lectures and exercises for deaf people can easily be provided. Collaborated with the linguists to implement the app that's designed specifically for deaf people.

Experience

- 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.
- 2013 **Product Development Specialist**, *Asseco South-Eastern Europe*, Istanbul.
Developed the back-end views of the virtual POS for banks. Used Java, Tomcat, Mercurial
- 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).
- 2013 **Computer Science RPG**.
I created an extra-curricular game for students to "level up" their computer science skills. Lead a team of undergraduate students.
- 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
- 2011 **VII. International Conference on Webometrics, Informetrics and Scientometrics (WIS)**, Istanbul.
Lead the preparation and compilation of the Book of Abstracts and the Proceedings.

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.

Natural Languages

Turkish ★★★★★

Native

English ★★★★★☆

Lived in US since 2015. All of my 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, Rust, Haskell 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 Gold League with 2350 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, Turkey, Summer 2004

Last compiled on August 26, 2019

Stars (★) indicate my level of confidence.