

# CANER DERİCİ

## Computer Science PhD Candidate

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Extended version (CV): cderici.github.io/cv.html

## SELECTED PROJECTS

### Pycket: A tracing JIT compiler for self-hosting Racket<sup>1</sup>

- PhD project on **Programming Languages**. I am the main developer since 2016. I re-designed the compiler front-end to make Racket bootstrap on Pycket, i.e., achieved a full Racket implementation on RPython framework. Developed performance analysis/debugging tools, implemented various optimizations and large number of run-time primitives. Maintained and improved the run-time data structure implementations (hash tables, vectors, structs etc.).

### HazirCevap (Witty): A closed domain question answering system for high school students

- MSc project on **Natural Language Processing**. I led the research and development, 3 faculty members and 4 grad students were involved. This was my MSc thesis work (see Publications). I developed a hybrid model for question analyzing (Hidden Markov Model along with a rule-based model), developed a reliability score for web-pages/documents, used the Indri search engine for processing and retrieval for answer generation, implemented both the front and back-end in Python.

### SessizliĖe Oku (Read to Silence): An application to teach people with hearing disability how to read

- I was the main developer. 2 faculty members from Linguistics, 1 from CS, and 2 RAs were involved. We aimed to develop a stable framework, so Turkish grammar lectures and exercises could be easily accessible for Deaf people. Collaborated with the linguists to implement a web & mobile app specifically designed for Deaf people. Used JavaScript, HTML and PhoneGap.

### Rax: A full-stack nanopass compiler from a small subset of Racket to x86\_64 assembly<sup>2</sup>

- Started for school, turned into a growing fun project. Two-person collaboration. I built and tested all the passes (e.g., closure conversion, register allocation, code-gen, etc.).

### FARS: Functional Automated Reasoning System<sup>3</sup>

- 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.

## PUBLICATIONS

- Flatt M., Derici C. Dybvig R. K., Keep A. et. al. "Rebuilding racket on chez scheme (experience report)", ICFP'19
- Derici C. et. al. "A closed-domain question answering framework using reliable resources to assist students" Natural Language Engineering'18
- Derici C. et. al. "Question analysis for a closed domain question answering system", CICLING'15
- Derici C. et. al. "Rule-based focus extraction in Turkish question answering systems", SIU'14
- Bařar R. E., Derici C., and řenol Ç. "World With Web: A compiler from world applications to JavaScript". Technical Report, Scheme and Functional Programming Workshop'09

<sup>1</sup><http://www.github.com/pycket/pycket>

<sup>2</sup><https://github.com/cderici/rax>

<sup>3</sup><https://github.com/cderici/FARS>

## EDUCATION

- PhD (Grad. 2020), CS, Indiana University, USA
- PhD CS, BoĖaziĖi University, Turkey (Dropped)
- MSc CS, BoĖaziĖi University, Turkey
- BSc CS, Istanbul Bilgi University, Turkey

## SKILLS

Racket	●●●●●●
Python	●●●●●●
Java	●●●●●●
C/C++	●●●●●●
JavaScript	●●●●●●
Go, Rust, Haskell	●●●●●●
SQL, Matlab, R, CSS	●●●●●●
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Linux	●●●●●●
Git/Version Control	●●●●●●
LaTeX	●●●●●●
Emacs	●●●●●●

## EXPERIENCE

- **Teaching & Research Assistant**, Indiana University, 2015 – 2019. Taught Introduction to Programming, Domain Specific Language Design.
- **Product Development Specialist**, Asseco SEE, 2013. Developed and tested virtual point-of-sale applications. Used Java, Tomcat, Spring, Mercurial, Jira.
- **Teaching Assistant**, Istanbul Bilgi University, 2010 – 2013. Taught Data Structures & Algorithms, Programming Language Principles, Database Systems.
- **Hackathonist'14**, Istanbul, 2014. Developed a Google Glass application (running on a mock glass API) that talks with the CitySDK for various smart city tasks (e.g., finding a suitable bus-route).

## AWARDS & SCHOLARSHIPS

- Full Scholarship for BSc, 2005-2010
- Research Scholarship for MSc (fully funded for 2 years)
- Scholarship for a research project on teaching natural languages to hearing impaired, 2014.

## SPOKEN LANGUAGES

Turkish (native)	●●●●●●
English (lived in US since 2015)	●●●●●●