# CANER DERİCİ

**Software Engineer – ABD PhD Candidate, Computer Science, Programming Languages**

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## SELECTED PROJECTS

### Pycket: A tracing JIT compiler for self-hosting Racket[1]

- PhD project on **programming languages**. I am the main developer and maintainer 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, theoretical models, implemented various optimizations and large number of run-time primitives. Maintained and improved the run-time data structure implementations (hash tables, vectors, structs etc.).

### Rax: A full-stack nanopass compiler from a small subset of Racket to x86_64 assembly [2]

- Open source project. Built and tested all the passes (e.g., closure conversion, register allocation, code-gen, etc.). Implemented optimizations, e.g. loop-invariant code motion, constant propagation, tail-calls etc.

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

- MSc thesis project on **natural language processing** and **machine learning** (see Publications). I led the research and development, 3 faculty members and 4 grad students were involved. I developed a hybrid (statistical & rule-based) model for question analysis, developed a reliability and relevance metric for web-pages/documents, used the Indri search engine for processing and retrieval for natural language answer generation, implemented both the front and back-end in Python.

### FARS: Functional Automated Reasoning System[3]

- 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.

### Sessizliğe 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.

## 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

- Başar R. E., Derici C., and Şenol Ç. "World With Web: A compiler from world applications to JavaScript". Technical Report, Scheme and Functional Programming Workshop'09

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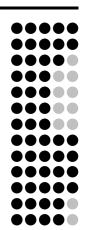[1] http://www.github.com/pycket/pycket
[2] https://github.com/cderici/rax
[3] https://github.com/cderici/FARS

## EDUCATION

- **PhD** (Grad. 2021), CS, Indiana University, USA
- **PhD** CS, Boğaziçi University, Turkey (Dropped)
- **MSc** CS, Boğaziçi University, Turkey
- **BSc** CS, Istanbul Bilgi University, Turkey

## EXPERIENCE

- **Software Engineer II**, Canonical Ltd, 2021-Present. Working in the Juju core team.
- **Product Development Specialist**, Asseco SEE, 2012-2013. Developed and tested virtual point-of-sale applications. Used Java, Tomcat, Spring, Mercurial, Jira, Jenkins.
- **Course Instructor**, Indiana University, Spring 2021. Introduction to Computer Science (HtDP Style Functional Programming).
- **Teaching & Research Assistant**, Indiana University, 2015–2020. Taught Advanced Compilers, Domain Specific Language Design, etc.
- **Teaching Assistant**, Istanbul Bilgi University, 2010 – 2013. Taught Data Structures & Algorithms, Programming Language Principles, Database Systems.

## TECH SKILLS

| Skill | Level |
|---|---|
| **Python** | ●●●●● |
| **Racket/Scheme/Lisp** | ●●●●● |
| **Java** | ●●●●○ |
| **JavaScript** | ●●●○○ |
| **C/C++** | ●●●○○ |
| **Haskell** | ●●●○○ |
| **SQL, Matlab, R, CSS** | ●●●○○ |
| **Linux** | ●●●●● |
| **Git/Hg/Version Control** | ●●●●● |
| **Maven/Jenkins/Auto Deploy** | ●●●●● |
| **Travis/Continuous Integration** | ●●●●● |
| **LaTeX** | ●●●●○ |
| **Emacs** | ●●●●○ |

## 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

| Language | Level |
|---|---|
| **Turkish (native)** | ●●●●● |
| **English (living in US since 2015)** | ●●●●○ |