CANER DERİCİ

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

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SELECTED PROJECTS

Juju: Universal Operator Lifecycle Manager (OLM) [1]

- A life-cycle manager for charmed operators for Kubernetes and traditional Linux apps, with declarative integration between operators for automated microservice integration for complex cloud workloads. I work in the core dev team (of 15). I maintain the main clients (cli, python-libjuju[2] and the terraform provier[3]), work on the facade api, charmhub integration and general maintanence.

Pycket: A tracing JIT compiler for self-hosting Racket[4]

- PhD project on **programming languages**. Main developer and maintainer for 5 years. 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

- 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 R&D by 3 faculties and 4 grad students. I developed a statistical model for question analysis, a reliability and relevance metric for webpages/documents, used the Indri engine for processing and retrieval for natural language answer generation, implemented both the front and back-end in Python.

FARS: Functional Automated Reasoning

- 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
- 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

[1] https://juju.is/
[2] https://github.com/juju/python-libjuju
[3] https://github.com/juju/terraform-provider-juju
[4] http://www.github.com/pycket/pycket

EDUCATION

- **PhD Candidate** , 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 (L3)**, Canonical Ltd, 2021-Present. Juju core team. Mainly in Go, Python.
- **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

Python	●●●●●
Go	●●●●○
Racket/Scheme/Lisp	●●●●●
Java, C/C++	●●●○○
Haskell	●●●○○
SQL, Matlab, R, CSS, JavaScript	●●●○○
Linux	●●●●●
Docker, LXD - Containers	●●●○○
AWS, k8s - Cloud Clusters	●●●○○
Git, Hg - Version Control	●●●●●
Maven, Jenkins - Auto Deploy	●●●●○
Travis, GH Actions - CI	●●●●●
LaTeX	●●●●○
Goland, Emacs, VSCode	●●●●○

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 (living in US since 2015)	●●●●●

Last compiled on June 8, 2023