

Caner Derici

Computer Scientist

<http://caner.deric.me>

+90 506 307 82 87

✉ caner.deric@boun.edu.tr

Education

2014– **PhD**, *Boğaziçi University*, Computer Engineering Department.

2011–2014 **MSc**, *Boğaziçi University*, Computer Engineering Department, 3.38.

2005–2010 **BSc**, *Istanbul Bilgi University*, Computer Science Department, 2.78.

Concentrated on computational theory and programming language theory & implementation.

2001–2005 **High School**, *Adem Tolunay Anadolu Lisesi*, Antalya.

MSc Thesis

title *Question Analysis and Information Retrieval For a Turkish Question Answering System: HazırCevap*

supervisors Prof. Tunga Güngör, Assoc. Prof. Arzucan Özgür, Prof. Günizi Kartal

description This study describes and evaluates the techniques we developed for the question analysis and information retrieval (IR) module of a closed-domain Turkish factoid Question Answering (QA) system that is intended for high-school students to support their education. We propose novel methods for two major problems in question analysis, namely focus extraction and question classification, based on integrating a rule-based and a Hidden Markov Model (HMM) based sequence classification approach, both of which make use of the dependency relations among the words in the question. We also built an IR module that searches for the relevant documents and passages through the combined use of search engines Indri and Apache Lucene.

Undergraduate Thesis

title *Proper Tail Calls From First-Class Continuations in JavaScript*

supervisors Chris Stephenson, Prof. Shriram Krishnamurthi, Prof. Alpaslan Parlakçı, Matthew Edwards

description This study demonstrates that a proper tail-calling behavior on Javascript is possible while refraining from any modification on interpreter. It is based on the paper titled Continuations from Generalized Stack Inspection, Pettyjohn et al., in which a novel program transformation is presented for Javascript programs to obtain first-class continuations from exception handling mechanism. My thesis takes it one step further, showing that by using this continuation model on Javascript, achieving a tail-call optimized computation is possible, without ever touching the interpreter.

Publications

Emre Başar, Caner Derici, and Çağdaş Şenol. Worldwithweb: A compiler from world applications to javascript. *Scheme and Functional Programming Workshop, Boston*, August 2009.

Caner Derici, Kerem Çelik, Ekrem Kutbay, Yiğit Aydın, Arzucan Özgür, Günizi Kartal,

and Tunga Güngör. Question analysis for a closed domain question answering system: Hazırcevap. *North American Chapter of the Association for Computational Linguistics, NAACL (Submitted)*, November 2014.

Caner Derici, Kerem Çelik, Ekrem Kutbay, Yiğit Aydın, Arzucan Özgür, Günizi Kartal, and Tunga Güngör. Rule-based focus extraction in turkish question answering systems. *IEEE Sinyal İşleme ve İletişim Uygulamaları Kurultayı (Signal Processing and Communication Applications Conference)*, Trabzon, April 2014.

Seminars & Talks

December 2013 “**Natural Language Processing Techniques on Tweet Data**”, *Inet-tr’13, Internet Technologies in Turkey, Istanbul University*, with Prof. Suzan Üsküdarlı, from SosLab & Complex Systems Laboratory.

October 2010 “**Wir müssen wissen! Wir werden wissen!**”, *Istanbul Bilgi University*.

December 2011 “**Sorulmayan Sorular: Bu yoğurdu saklasak mı?**” (Turkish), *Istanbul Bilgi University*.

Experience

Research Projects

Feb 2014 - **Sessizliğe Oku (Read to Silence)**, *Funded by KOÇ Group, joint project with Department of Western Languages & Literatures.*, Two faculty members from Linguistics department, one from Computer Engineering department, and two research assistants are involved., Project aims to develop a stable framework on which the Turkish grammar lectures and exercises for *deaf* people can easily be provided..

System is specifically designed for deaf people on both PC and mobile devices, can be accessed by : <http://fatih.cmpe.boun.edu.tr/demo/template3>

Sep 2013 - **HazırCevap**, *Government funded project (TUBITAK)*, a closed domain question answering system for high school students., 3 faculty members (from different faculties) and 4 grad students are involved., This project is my MSc thesis, so I develop pretty much everything with the other grad students.

Preliminaries can be found from : <http://fatih.cmpe.boun.edu.tr/questions/>

GitHub Repo for question analysis module : <https://github.com/cderici/question-analyzer>

Sep 2013 - **Direnaj**, *Data Collection, Processing and Visualization Framework for real-time social network data*, 4 faculty members and 7 grad students are involved., I develop parts of the processing library with JavaEE, implementing certain tools used for various kinds of analyses, such as centrality analysis, stopword collection, etc..

<http://direnaj-staging.cmpe.boun.edu.tr/>

2009-2010 **moby-scheme**, *Project from Brown University under supervision of Prof. Shriram Krishnamurthi, a compiler from Racket Advanced Student Language to mobile through JS and HTML*, Participated in development of both compiler and runtime libraries. Implemented tail-call optimized computation as I researched it as my undergraduate thesis (see undergraduate Thesis), <https://github.com/cderici/moby-scheme>.

Fall 2012 **FARS: Functional Automated Reasoning System**, *Resolution-refutation style automated theorem prover, written all in PLT Racket by myself, still in development.*, <https://github.com/cderici/FARS>.

Teaching

2011-2012 **Teaching Assistant**, *Istanbul Bilgi University*, Istanbul.

Fall:

- Cmpe 170 - Algorithms and Programming II
- Comp 231 - Data Structures and Algorithms I
- Comp 313 - Structure and Interpretation of Computer Programs

Spring:

- Comp 180 - Fundamentals of Computer Science II
- Comp 314 - Principles of Programming Languages
- Comp 382 - Database Systems II (I lectured on Data Mining)

Summer 2011 **Instructor**, *Taught Lambda Calculus to Math graduate students and “Programming=Algebra” to high-school students with Chris Stephenson*, Nesin Math Village, Şirince/Selçuk, İzmir.

Turkey

2010-2011 **Teaching Assistant**, *Istanbul Bilgi University*, Istanbul.

Fall:

- Comp 313 - Structure and Interpretation of Computer Programs
- Comp 231 - Data Structures and Algorithms I
- Cmpe 169 - Algorithms and Programming I
- Cmn 167 - Computational and Mathematical Numeracy for Social Scientists I

Spring:

- Cmpe 169 - Algorithms and Programming I
- Cmpe 170 - Algorithms and Programming II
- Comp 314 - Principles of Programming Languages

2007-2008 **Student Assistantship**, *Istanbul Bilgi University*, Istanbul.

Lab system maintenance, support in various departmental organizations and projects.

Industrial

2012-2013 **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.

Professional Activities

March 2014 **Conference Reviewer**, *IEEE 22th Conference on Signal Processing and Communication Applications*, Reviewed two full papers on statistical information retrieval., SIU 2014.

April 2014 **Conference Reviewer**, *25th International Conference on Computational Linguistics*, Reviewed a paper on question answering systems., COLING 2014.

Fall 2013 **Developer**, *Hackathonist'14*, Istanbul.

We 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).

GitHub Repo: <https://github.com/TheBardak/mirror-api>

September 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 **ILR Level 5**

Native

English **ILR Level 4** *Full English education in both Bilgi & Boğaziçi. Also did classes entirely in English at Bilgi (see TA). TOEFL results are below.*

Programming Languages

Racket/ Scheme/ LISP	Excellent	<i>7 years of extensive experience, wrote a compiler (see Publications), implemented countless number of languages with different characteristics with continuations and macros, studied operational semantics and wrote a dozens of simple games as well as some web applications running on plt-web-server.</i>
Python	Advanced	<i>In both Direnaj and HazırCevap projects (MSc Thesis), coding natural language processing and social semantic analysis algorithms dealing mostly with (dirty) BigData</i>
Javascript	Advanced	<i>Wrote the runtime libraries of The Moby Compiler and WorldWithWeb, along with the code generation modules for WorldWithWeb. Also implemented tail calling behavior on Javascript without modifying the interpreter. (see Undergrad Thesis)</i>
Java	Advanced	<i>Industrial experience. Also developed a simple mobile application on Android platform, implemented a distributed algorithm for a research project.</i>
Haskell	Moderate	<i>Wrote a handful of simple interpreters and various kinds of simple programs.</i>
C/C++	Moderate	<i>Studied computer graphics with OpenGL, developed mobile applications on Bada 1.0 platform and some modules (lexical&semantic analyzer, code generator) of a compiler.</i>
Misc.	Moderate	<i>SML, SQL, MatLAB, R.</i>

Research Interests

Programming Languages	Lambda calculus, partial evaluation, operational semantics & interpreter design, denotational semantics, type systems (particularly polymorphic type inference), abstract register machines
Functional Programming	Programming with Continuations, Monad Transformers, Pattern-matching & Macro Expanders
Natural Language Processing	Open/Closed Domain Question Answering Systems, Statistical Parsing & Part-of-Speech Tagging
Theory of Computation	Interactive Proof Systems, Complexity Theory, Probabilistic Computation

Awards & Scholarships

- Research Scholarship for 6 months, funded by KOÇ Group
- 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.
- Student Selection and Placement Center(OSYM) Full Scholarship for BSc, 2005-2010
- Best Band Performance & Second Best Composition at The Musical Contest among high schools in Antalya, Summer 2004

Personal Interests

- Learning eastern and western languages
- European, Ottoman and Islam history
- Playing and studying chess.

-Semi-professional musician, little experience on sound-processing technologies, mix&mastering, sound-proof musical studio design and building. 11 years of active stage experience, instruments played: (mostly) electric guitar, drums and keyboard. Song arrangements, rhythm patterns and musical intervals, little experience on amateur band coaching.

-Tango

-Charcoal abstract drawing, see my homepage.

-Traveling&Camping (especially on Mediterranean Region of Turkey, Toros Mountain range)

-10 years of Fantasy Role Playing (and dungeon mastering) experience (mostly 3.5eD&D and AD&D)

Standard Tests

11 Sep 2013 **GRE**, Istanbul.

- Quantitative : 161 / 170
- Verbal : 146 / 170
- Analytical Writing : 3.5 / 6

27 Sep 2013 **TOEFL IBT**, Istanbul.

- Total : 98 / 120
- Reading : 26 / 30
 - Listening : 25 / 30
 - Speaking : 23 / 30
 - Writing : 24 / 30