**Oguz Ulgen**

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**SUMMARY**

Experienced software engineer with a strong background in compilers, language design and type theory.

# PROFESSIONAL EXPERIENCE

**Facebook / Meta 2016 – Present**

## Staff Software Engineer

## Worked as a primary engineer on HHVM (HipHop Virtual Machine) building just-in-time (JIT) compiler that executes Hack Language code. The compiler is written in C++, OCaml and Rust.

## Optimized x86-64 assembly code generation

## Profile guided optimizations such as load/store elimination, ref-counting elimination, stack frame elimination and inlining

## Whole program analysis optimizations

## Bytecode to bytecode optimizations

## Built CPU load driving based performance measurement framework that utilizes production traffic in a privacy-safe manner to

## Automate performance regression detection

## Enabled fast iterations by providing a toolkit for setting up, running and monitoring A/B tests

## Debugged and fixed Facebook-wide production critical events under heavy time pressure

## Facilitated core framework teams to perform massive scale migrations on a monolithic codebase to type safe and performant code

## Designed and coordinated compiler driven solutions to privacy, modularity and access control management across the company’s web tier

## Pioneered scaling solutions to a monolithic codebase that allows

## Modularized deployment with API level boundaries

## Automated external privacy and legal compliance for data dependency and access control

## Created privacy data flow analysis via

## Implicit Contexts and Co-effects: an async computation aware generalized system for the description and enforcement of permissions and restrictions of an implicitly declared contexts

## Deep constant values (read-only): a feature to control mutability of reference types

## Engineered type safety formalizations with

## Reified generics: runtime aware generic information for polymorphic programming

## Generalized native type testing and type assertions

# Facebook / Meta Summer 2015

## Software Engineer Intern

## Built back-end infrastructure for finding visual regressions on mobile applications

## Designed and implemented an infrastructure for scheduling analysis jobs

# Microsoft Summer 2014

## Software Development Engineer Intern

## Developed back-end infrastructure for personalized machine learning models

## Improved user gender prediction models for personalized web search relevance

# Yahoo Summer 2013

## Mobile Engineering Intern

## Worked on Yahoo! Search native mobile application for iOS

## Co-authored an image decoding and processing library

# Biber 2011 – 2012

## Junior Software Developer

## Developed a single-player iOS game

# PERSONAL PROJECTS

**CudaPy Compiler 2015**

* Designed and implemented a JIT compiler that translates CUDA kernels written in Python to C++
* Authored a Python runtime library that lets access to CUDA parallel computation API

**PCF (extended version of typed lambda calculus) Compiler 2014**

* Investigated higher order typed program compilation
* Studied bytecode verification
* Authored a functional PCF compiler

# EDUCATION

**Carnegie Mellon University**, Pittsburgh, PA **2012 - 2016**

* Bachelor of Science in Computer Science (GPA: 3.45/4.00)
* With a minor in Mathematics
* Dean’s list for several semesters

# SKILLS

C/C++, Python, OCaml, SML, Haskell, PHP, Hack, Rust, x86 assembly, Bash