# Göksu Güvendiren Bakır

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## SUMMARY

I am a second year Master's student in UC Santa Barbara. My current research area is on Computer Graphics, specifically offline rendering. The aim of my research is to come up with a better light transport algorithm, and converge faster in difficult scenes. In my undergraduate education I have worked on real-time and offline Computer Vision, and Computational Photograpy. I have worked on several projects on High Dynamic Range (HDR) imaging, some of which can be found in Projects section.

## EDUCATION

*Master of Science,* *Sept 2018 - Ongoing*
Computer Science, 4.00/4.00
University of California, Santa Barbara

*Bachelor of Science,* *Sept 2012 - June 2017*
Computer Engineering, 3.36/4.00
Middle East Technical University, Ankara, Turkey

## WORK EXPERIENCE

**Amazon Inc.** June 2019 - Sept 2019
*Software Development Engineering Intern*

- Worked on the full-stack implementation of the mitigation of a SSRF (Server Side Request Forgery) vulnerability in a service in Amazon's Developer Portal. The service provides and tests the integration of third party vendors who want to sell subscriptions through Amazon.
- Previous implementation had been shut down because of the vulnerability, blocking hundreds of vendors in Europe and Japan from onboarding to Amazon.
- The updated implementation has solved the problem, and has been shipped to production in mid-September, unblocking the mentioned vendors and enabling Amazon to sell the products of those vendors.

**Kuartis Technology and Consulting, Ankara, Turkey** Sept 2017 - July 2018
*Software Engineer*

- Implemented an image registration algorithm for aerial hyper-spectral images. These images are captured by two sensors that can take images in different wavelengths (one in Visible Near Infra-Red, the other one in Short Wave Infra-Red). Maximized mutual information while registering the images, since other methods do not work well for non-planar images and images that are in different spectra.
- Worked on a real-time object tracking project using PTZ cameras. The application was built on top of Nvidia's TX2 devices, and enabled improved tracking with the use of PTZ cameras that adjusted its gaze to have a better view of the tracked person.
- Implemented a generic easy and fast to use camera capture class that is capable of handling almost all kinds of cameras, from USB to Intel's RealSense to thermal cameras.
- Used C++ as the language, and most used libraries are : OpenCV and CUDA

**WMG, Warwick University, Coventry, UK** June 2016 - Aug 2016
*Software Engineering Intern*

- Worked on the world's first web based HDR image viewer. More details can be found in *projects* section.
- Worked on the implementation of a High Dynamic Range (HDR) video deghosting algorithm.
- Provided support to PhD students with their projects when needed.

## OTHER PROJECTS

### E2EHDR

- E2EHDR is my senior project in which we propose a solution to overcome the cost of acquiring and displaying High Dynamic Range video. We use two regular cameras in different exposure settings to acquire video frames. Then we match these frames and create HDR images in real time (around 25 fps) using GLSL.
- Since daily display devices lack the ability to display more than 8 bits per channel, we built a custom display system which uses a projector as back-light in a usual LCD display system. Using a projector instead of a regular back-light enabled us to control the brightness levels in the scene, thus we could display HDR content.
- This project won 4th place among 27 projects in departmental graduation projects contest.

### OpenHDR

- OpenHDR is the world's **first and only** online HDR viewer. Since displaying HDR in a regular display device is not possible without a heavy software (such as Photoshop), we built a website in which anybody can drag-drop their HDR images and view it in real time.
- We compiled OpenEXR library (in C++) to JavaScript using Emscripten to be able to read HDR images, and render those images using WebGL.

## EXTRAS

I am one of the UCSB Women in Computer Science officers since September 2018

I hold 3 High Honors and 4 Honors during the 8 semesters of undergrad in METU.

I played Handball in METU for 2 years. I love (taking, viewing, processing) photography, and calligraphy.