

# Mustafa B. Yaldiz

Github://myaldiz  
LinkedIn://myaldiz

<https://myaldiz.info>  
✉ myaldiz@kaist.ac.kr

## Education

### KAIST

B.Sc. Computer Science – CGPA: 3.62(92.44 / 100)

Fall 2015 – Fall 2019

Daejeon S.Korea

### Georgia Tech

Exchange Student

Spring 2019

Atlanta, GA

### KAIST

MS. Computer Science – CGPA: 3.8(94.44 / 100) Advised by Min H. Kim, Visual Computing Lab(VCLAB)

Spring 2020 – Spring 2022 (Expected)

Daejeon S.Korea

## Research Interests

My research interests cover **computer vision**, **computational photography**, and **computer graphics** fields. I have worked on the development of a camera-light stage for **multiview high-quality 3D scanning**. Also, I utilized my deep learning knowledge on low-level NLP tasks during my internship. In my recent research, I developed first of its kind learned deformable fiducial marker system with differentiable **photorealistic rendering**, and specialized marker detection networks. These days, I am working on **high-quality geometry and appearance modeling** using the learning methods.

## Publications

**Mustafa B. Yaldiz**, Andreas Meuleman, Hyeonjoong Jang, Hyunho Ha, Min H. Kim (2021), “DeepFormableTag: End-to-end Generation and Recognition of Deformable Fiducial Markers,” ACM Transactions on Graphics (**ACM TOG**), 40(4), will be presented at **SIGGRAPH 2021**, Aug 9–Aug 13, 2021, (**SCI-IF=6.495**)

## Internships

### Fintech Firm

Quantitative Researcher

Summer 2019

Singapore

- I built and extended the language processing packages of the firm through modifying and contributing open-source project flair
- I preprocessed finance related news dataset for the **Named Entity Recognition(NER)** and **Entity Relation Extraction(RE)** tasks
- I trained a **NER model** that detects company entities, and improved accuracy from 80% to 99%
- I developed a brand new RE model that returns **entity relation graph** for given sentence
- I **developed an alpha** for stock investment using textual finance data and stock market information

## Research Projects

### Camera-Light Stage V1.0

Undergraduate researcher

Jan. 2017 – Feb. 2018

VCLAB, KAIST

- We constructed **camera&light stage** for a 3D scanning system with more than 100 cameras and light sources. I developed a scalable calibration method and TCP-based software for controlling the system with Qt GUI.
- Project is a part of URP(Undergraduate Research Program) at KAIST

### Camera-Light Stage V2.0

Team-leader

Sep. 2019 – Now

VCLAB, KAIST

- We are constructing a larger camera&light stage with more than 180 cameras, and 300 polarized light sources. I am leading a team of people for developing the new hardware and software.
- We designed gRPC-based distributed controlling software, capable of synchronized capture and processing.
- We implemented scalable and precise camera-light calibration methods through joint optimization.
- We designed a custom light controlling circuit, with high refresh-rate dimming functionalities. I designed and manufactured a custom polarizer stands for the light-nodes (in large scale) using laser-cutter and 3D printers.

## Side Projects

### Distributed NERF

We built a cluster of Jetson Nano’s and optimized **neural radiance field** in a distributed manner. We created Docker container clusters and efficiently scale-up the system. I implemented the model for distributed optimization using **PyTorch-Distributed**. I also implemented the camera localization software using Aruco from OpenCV.

Spring 2020, KAIST

### VioNet

We built a video processing system to detect the violence. We created a video dataset through YouTube for fine-tuning. I implemented and fine-tuned **3D convolutional neural network** C3D for violence detection.

Spring 2019, GATECH

### Zombie Apocalypse: Heemang

We made an interactive **VR game in Unity** using Oculus Rift. I set up advanced illumination features for the environment, and developed an efficient path-finding algorithm for zombies. We won the best project award at Interactive Graphics Class.

Fall 2017, KAIST

## Skills

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**Machine/Deep Learning:** PyTorch, Tensorflow, Keras, Sklearn, Caffe

**Software:** OpenCV, Unity, Unreal-engine, Blender, Qt

**Manufacturing:** (Tools) CNC, Laser-cutter, 3D-printer – (Software) Autodesk Fusion360, Cura

**Languages:** English, Turkish(Native), Korean(Intermediate)

**Interests:** Mountaing climbing, running, playing guitar and piano

## References

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### **Prof. Min H. Kim**

(Master's Degree Advisor)

Endowed Chair Professor

KAIST, School of Computing

291 Daehak-ro, Yuseong-gu,

Daejeon, Korea, 34141

☎ +82-42-350-3564

✉ minhkim@vclab.kaist.ac.kr

### **Dr. Giljoo Nam**

(Undergraduate Research Advisor)

Research Scientist

Facebook Reality Labs

✉ namgiljoo@gmail.com

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