

## Duin Baek

Email: [duin.baek@gmail.com](mailto:duin.baek@gmail.com)

Linked-in: [www.linkedin.com/in/duin-baek](http://www.linkedin.com/in/duin-baek)

Mobile: +1-631-202-7618

Git-hub: <https://github.com/barrelo89>

### Education

---

**Stony Brook University, New York, US**

January 2014 – Jan 2022 (expected)

- Ph.D. Candidate of Engineering in Computer Science, GPA: 3.85/4.0

**Yonsei University College of Engineering, Seoul, Korea**

March 2008 - February 2014

- Bachelor of Science in Electrical Engineering, GPA: 3.61/4.5

### Research Focus

---

#### Machine learning application for

- 1) Improving Quality of Experience in Video Streaming Service
- 2) Video Compression Using Machine Learning
- 3) User Authentication by Analyzing Human-related data (Bio & Sensor data)

---

### Publications (family name changed from 'Baek' to 'Baek', \*Equal Contribution)

1. **Duin Baek**, Mallesh Dasari, Samir R. Das, and Jihoon Ryoo, "dcSR: Practical Video Quality Enhancement Using Data-Centric Super-Resolution", ACM CoNEXT'21, Munich, Germany, December 7-10, 2021,
2. **Duin Baek**, Hangil Kang, and Jihoon Ryoo, "SALI360: Design and Implementation of Saliency based Compression for 360 Video Streaming", ACM MMSys'20, Istanbul Turkey, June 8<sup>th</sup>
3. **Duin Baek**, Jing Chen, and Bong Jun Choi, "Small Profits and Quick Returns: An Incentive Mechanism Design for Crowdsourcing under Continuous Platform Competition", IEEE Internet of Things Journal, Sep 13, 2019 (2018 JCR IF: 9.515)
4. **Duin Baek**, Pratik Musale, and Jihoon Ryoo, "Walk to Show Your Identity: Gait-based Seamless User Authentication Framework Using Deep Neural Network", ACM WearSys 2019, Seoul Korea, June 21
5. **Duin Baek**, Hangil Kang, and Jihoon Ryoo, "Saliency based 360° Video Contents Encoding for Streaming Service" (poster), ACM MobiSys '19, June 17-21 2019
6. **Duin Baek\***, Pratik Musale\*, Simon Woo, and Bong Jun Choi, "You Walk, We Authenticate: Lightweight Seamless Authentication based on Gait in Wearable IoT Systems", IEEE Access, March 08, 2019 (2018 JCR IF: 4.098)
7. **Duin Baek\***, Pratik Musale\*, and Bong Jun Choi, "Lightweight Gait-based Authentication Technique for IoT System," 2018 IEEE 4<sup>th</sup> World Forum on Internet of Things, Singapore, Feb 05-08 2018
8. **Duin Baek\***, Pratik Musale\*, Simon Woo, and Bong Jun Choi, "Lightweight Gait-based Authentication Technique for IoT System," ACM CoNEXT 2017, Student Workshop, Incheon Korea, Dec 12-15 2017
9. **Duin Baek**, Bong Jun Choi and Jing Chen, "Small Profits and Quick Returns: A Practical Social Welfare Maximizing Incentive Mechanism for Deadline-Sensitive Tasks in Crowdsourcing," AAAI HCOMP 2017, Work-In-Progress paper, Quebec Canada, Oct 23-26 2017

## Internship Experience

---

Machine Learning Engineer, Conatix

June – September, 2021

Build an anomaly detection pipeline for banking system employees

- Time series data analysis: GAN & LSTM model
- OCR-based malicious activity detection

## Projects Experience

---

Low-cost professional-cleaning multiple-robot system (for complex, multi-floor, and wide environments)

- Global ATC (Advanced Technology Center), Ministry of Trade, Industry and Energy, South Korea, April 2017 – December 2017
- Role: Fleet Management Platform Design & Robot Coverage Path Optimization

SALI360: Saliency-based 360 Video Streaming Service

- National Research Foundation, January 2017 – Present
- Role: Saliency-based VR Video Encoding

## Hackathon Experience

---

GaitKeeper: an authentication service that achieves secure and interactionless authentication by learning a user's unique *gait* and combining it with user device history. [[Hack@CEWIT 2020](#), Netsmart's & Payfone's Pick]

## Computer Language Proficiency

---

**Python:** Big Data analysis (numpy, pandas), Machine learning (scikit, sklearn, tensorflow, pytorch), Computer vision (opencv)

**C/C++, CUDA Programming, SQL, Java (android programming), Matlab**

## Patent & Certificate

---

Encoding and Decoding Method for Virtual Reality Video

Patent 10-2018-0147686 in Korea

NLP with Deep Learning in Python

UC-9OFOJESB, Udemy August 2017

Natural Language Processing (NLP) in Python

UC-D1GT3IHQ, Udemy August 2017

## Scholarships

---

Merit-based scholarship (1/3<sup>rd</sup> tuition)

Fall 2011

National Scholarship for Science and Engineering (full tuition)

2012–2013

IT Consilience Creative Program (ITCCP) scholarship (full tuition + housing)

2014–2016

## Teaching Assistant

---

CSE219 Computer Science 3 (Android Application Design and Development)

Spring 2017

CSE535 Distributed System

Fall 2021