


# Daniel Youngho Kim, PhD

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## Summary

Full stack data scientist with 11+ years of experience:

- ✓ 3+ years of data science in MSD and Samsung SDS
- ✓ 8 years of data science in academia
- ✓ 11 academic papers in total including one highlighted by Nature.com main page
- ✓ 8 awards through multidisciplinary research collaboration experience
- ✓ 1 text book translation
- ✓ English: Advanced Level at the British Council

## Education

- 2008-09 ~ 2015-08 Ph.D. in Physics, KAIST, Republic of Korea  
Supervisor: Prof. Hawoong Jeong (KAIST)
- 2013-11 ~ 2014-06 Visiting Research Assistant  
Institute for New Economic Thinking, University of Oxford, UK
- 2004-03 ~ 2008-08 B.S. in Physics, KAIST, Republic of Korea  
Supervisor: Prof. Hawoong Jeong (KAIST)

## Work Experience

- 2019-06 ~ Present Senior Data Scientist  
Merck Sharp & Dohme, Seoul, Republic of Korea
- 2016-09 ~ 2019-06 Data Scientist / Senior Consultant  
Samsung SDS, Seoul, Republic of Korea
- 2016-02 ~ 2016-05 Academic Visitor  
Institute for New Economic Thinking, University of Oxford, UK
- 2015-08 ~ 2016-08 Post-Doctoral Researcher  
KAIST Natural Science Research Institute, Daejeon, Republic of Korea
- 2012-03 ~ 2012-06 Research Assistant  
Samsung Economic Research Institute, Seoul, Republic of Korea

2008-01 ~ 2008-06

Internship

CYRAM, Seoul, Republic of Korea

## Project

Major projects in which I played main role are as described below.

2019-11

Affiliation: MSD Korea (In-house project)

- ✓ Significantly reduced time of marketing related tasks (+90% ↓)

2019-10 ~ Present

Affiliation: MSD Korea (In-house project)

- ✓ Made a text-to-speech which saved cost (100+ M KRW)

2019-10 ~ 2019-11

Affiliation: MSD Korea (In-house project)

- ✓ Made two self-service dashboards (back-end, front-end, data analysis, and interactive visualization) which may reduce the failure rate of clinical trials

2019-09

Affiliation: MSD Korea (In-house project)

- ✓ Combined the following Korean public data: house price, population above an age, hospital features, national health insurance, and sales

2019-08

Affiliation: MSD Korea (In-house project)

- ✓ Marketing activity optimization for resource allocation

2019-07 ~ 2019-08

Affiliation: MSD Korea (In-house project)

- ✓ Supply chain optimization
- ✓ Interactive data visualization

2019-07

Affiliation: MSD Korea (In-house project)

- ✓ Significantly reduced time of HR tasks (90+% ↓)

2019-06 ~ Present

Affiliation: MSD Korea

- ✓ Led data science projects for a wide range of in-house clients.
- ✓ End-to-end responsibility of project execution, understanding the client problems, management, allocation of resources, design and implementation of the solution.

2018-02 ~ 2019-06

Affiliation: Samsung SDS

Project Site: Semiconductor Division, Samsung Electronics

Role

- ✓ Led a data science team for clients in the semi-conductor field.
- ✓ Implemented data science projects.
- ✓ End-to-end responsibility of understanding the client problems, project execution, management, allocation of resources, design and implementation of the solution.
- ✓ Thought leader on technical topics such as deep learning
- ✓ Accelerated legacy distributed anomaly detection algorithms (×100+ ↑)

2017-07 ~ 2017-12

Affiliation: Samsung SDS

Project Site: Semiconductor Laboratory, Semiconductor Division, Samsung Electronics,

Role

- ✓ Implemented data science projects.
- ✓ End-to-end responsibility of understanding the client problems, project execution, management, and implementation of the solution.
- ✓ Thought leader on technical topics such as deep learning
- ✓ Achievement: Anomaly image classification accuracy (~97%)

2017-01 ~ 2017-03

Affiliation: Samsung SDS

Project Site: YES24 (Top e-commerce company in Republic of Korea), Seoul

Role

- ✓ Implemented data science project.
- ✓ Developed interactive data visualization applications
- ✓ Achievement: Sales forecasting accuracy (~90%)

## Skill & Expertise

Language: English

- ✓ The British Council Language Center Korea: Advanced Level
- ✓ OPIc (Oral Proficiency Interview-Computer): Intermediate High (The second highest level)

Specialized Area

- ✓ Data Analysis with Python, R, C/C++ & Julia.
  1. Data Size Experienced: The whole Korean web graph (including 0.1 billion web pages and 13 billion links), the U.S. patent records (spanning over 2 centuries and including 10 million patents), and so on. (See the publication list below).
  2. Data Type Experienced: Image, audio, time series, text & graph/network structure
  3. Data Context Experienced: Social, economic, artistic, historical, technological, semiconductor manufacturing, and marketing
- ✓ Experienced Deep Learning Frameworks: keras (2017-09 ~ 2019-05), TensorFlow (2017-10 ~ 2017-12) & MXNet (2017-04 ~ 2017-06)
- ✓ Interactive Data Visualization with d3.js (2013 ~ Present) and processing.js (2010 ~ 2016)
- ✓ Numerical Simulation with C/C++, Intel® Math Kernel Library & Intel® Performance Primitives
- ✓ OS: Linux (Cent OS, RHEL & Ubuntu)
- ✓ Programming Language
  - Python (2010 ~ Present: Data analysis, ML/DL, & back-end)
  - C/C++ (2009 ~ 2016: Intermediate: numerical simulation)
  - R (2015 ~ 2017: Intermediate: data manipulation & time series forecasting)
  - JavaScript (2013 ~ Present: Intermediate: Interactive visualization & Front-end)
  - SQL (2018-02 ~ 2019-06: Intermediate), Bash (2010 ~ Present: Intermediate)

## Publication (Peer-reviewed)

1. Yongjoo Baek, Kihong Chung, Meesoon Ha, Hawoong Jeong, and Daniel Kim. "Role of hubs in outbreaks of cooperative contagions" Phys. Rev. E (R) 99, 020301(R) (2019).
2. Francois Lafond and Daniel Kim. "Long-run dynamics of the U.S. patent classification system" Journal

of Evolutionary Economics (2019).

3. Byunghwee Lee, Daniel Kim, Hawoong Jeong, Seunghye Sun, Juyong Park. "Heterogeneity in chromatic distance in images and characterization of massive painting data set" PLoS ONE 13(9): e0204430 (2018).
4. Byunghwee Lee, Daniel Kim, Dongwoo Kim, Hawoong Jeong. "N-gram Web Service and Stylometric Analysis on Korean Historical Documents" New Physics: Sae Mulli, 66, 4 (2016).
5. Daniel Kim, Daniel Burkhardt Cerigo, Hyejin Youn, Hawoong Jeong. "Technological novelty profile and invention's future impact" EPJ Data Science, 5:8 (2016).
6. Daniel Kim, Seung-Woo Son, Hawoong Jeong. "Large-Scale Quantitative Analysis of Painting Arts" Scientific Reports, 4, 7370 (2014).
7. Kihong Chung, Yongjoo Baek, Daniel Kim, Meesoon Ha, Hawoong Jeong. "Generalized epidemic process on modular networks" Phys. Rev. E, 89, 052811 (2014).
8. Jungjoo Seo, Jinil Kim, Eunsang Kim, Daniel Kim, Hawoong Jeong, Sung-Ryul Kim, Kunsoo Park. "Link Structure Analysis of Korean Web Graph" Journal of KIISE: Computing Practices and Letters, 19, 7 (2013).
9. Yongjoo Baek, Daniel Kim, Meesoon Ha, Hawoong Jeong. "Fundamental Structural Constraint of Random Scale-Free Networks" Phys. Rev. Lett., 109, 118701 (2012).
10. Daniel Kim, Seung-Woo Son, Hawoong Jeong. "Demographic Studies of Internet Routers" J. Korean Phys. Soc. 60, 585 (2012).
11. Sue Moon, Jinyoung You, Haewoon Kwak, Daniel Kim and Hawoong Jeong. "Understanding Topological Mesoscale Features in Community Mining" COMSNETS 2010, Bangalore, India, January 2010 (2010). (Peer-reviewed)

## Award

- ✓ INSPIRE Recognition Program Applause Award (August, 2019)
- ✓ 3rd grade award, BK21+ graduate student essay contest for overseas visits (July 21, 2015)
- ✓ 3 Best oral presentation awards, Korean Physical Society Meeting (Spring 2015, Fall 2012 & Spring 2011)
- ✓ 2 Best poster awards, Korean Physical Society Meeting (Spring 2012 & Spring 2010)
- ✓ Best team project award, the 3rd KIAS CAC Summer School on Parallel Computing (KIAS, Korea, June 26-28, 2012)
- ✓ Best poster award, the 3rd BK21 Young Physicists Workshop (Seoul National University, Seoul, Korea, January 15-16, 2010)

## Translation

Forecasting: Principles and Practice 2nd Ed. English to Korean.

Online Version: <https://otexts.com/fppkr/>

## Media Coverage

1. The paper [D. Kim, D. B. Cerigo, H. Jeong, H. Youn, "Technological novelty profile and invention's future impact" EPJ Data Science 5:8 (2016)] was introduced in [SpringerOpen blog](#) and [Santa Fe Institute news](#).
2. The paper [D. Kim, S.-W. Son, H. Jeong, "Large-scale quantitative analysis of painting arts", Sci. Rep. 4, 7370 (2014)] was posted on [Nature.com main page](#), being selected as a Nature Research Highlight (also held the first rank of the most viewed research highlight on Nature.com from 14 December 2014 to 14 January 2015). Subsequently, it was introduced and covered in [PNAS](#), [Daily Mail Online](#), [Business Insider Australia](#), 5 Korean TV news stations (Yeonhap news TV, YTN, KBS, MBC, and TJB) and 18 Korean major newspapers. [[Full List](#)]
3. In 2012, EBS, a Korean educational TV channel, conducted a questionnaire survey at a Korean middle school in Seoul, and my PhD supervisor and I were involved in analysis of its survey data. The result of my analysis was on TV on 24th April 2012.

## Honor

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|-------------------|---|
| 2013-10 ~ 2016-04 | Graduate Fellowship, Santa Fe Institute, USA                    |
| 2008-09 ~ 2009-08 | Graduate Student Research Scholarship, KOSEF, Republic of Korea |
| 2006-03 ~ 2007-11 | Department Honor Scholarship, KAIST, Republic of Korea          |

## Others

- ✓ Military Service: Republic of Korea Army  
(2010-11 ~ 2014-09)