Sung Jin Kim, Ph.D.

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**Summary**

Identified the cause of the target problem cluttered in the background and presented actionable alternatives with practical communication skills; Developed advanced analytics solutions for business problems, collaborating with cross-functional partners; Delivered effective presentations of findings and recommendations; Identified improvement opportunities based on intelligent visualization of scattered ideas; 10+ years of project-based working experience producing evidence-based recommendations with recognized awards and 6+ years of data mining leading & advising experiences with top-notch evaluations; Never shy away from catching up on emerging techs and skills.

**Skills**

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| * Python, R, R Shiny, STATA, SQL, SAS, SPSS * Tidying and analyzing large, messy data (relational & non-relational, structured & unstructured, stationary & non-stationary time series) * Data import, wrangle, transform, visualization * Descriptive, inferential, & predictive statistics | * Unsupervised and supervised machine learning, classification and regression, feature selection, parameter tuning, regularization, ensemble learning * Natural Language Processing (NLP), topic model * Cross-industry standard process for data mining * [Hierarchical decision modeling](https://pairwisecomparison.github.io/NewPCM/), AHP, Delphi process |

**Professional Experience**

Feb. 2021-current, *Adjunct Professor*, Department of Technology and Society, The SUNY Korea

* Advised on the project "Stock market movements via social media sentiment analysis" and assisted with

preprocessing tweet text from the JSON metadata object so that we could apply R libraries; Guided the team to perform correlation and regression analysis between the stock trends of Google, Apple, Microsoft, and Twitter sentiment; One of the team members who continued research until obtaining a master's degree entered the finance industry, Morgan Stanley, in New York. Another was admitted to the Ph.D. program in Machine Learning & Statistical Science at Texas A&M.

* Led a team project exploring factors explaining the volatility of stock prices, explicitly focusing on the top 45 corporations in the Forbes top 2000; Advised the team in performing correlation and regression analyses to see how explanatory variables such as sales, profit, assets, market value, volatility by country, number of employees, and years from the foundation are associated with the volatility of stock prices; One team member continued research on the same topic until graduation and was admitted to the Ph.D. program in statistics at Penn State University.
* Helped course-takers wrangle messy data and conducted exploratory data analysis using the World Bank, the World Health Organization, Restaurant reviews, Bank defaulters, Yahoo finance, NYC flights, and TMBD (movie) datasets; Applied libraries in Python (pandas, numpy, seaborn, matplotlip, plotnine/plotly, scipy, math, scikit-learn, joblib) and R (tidyverse, caTools, ggplot2, dplyr, caret, broom, NLP, tm, lubridate, wordcloud, shiny) for wrangling, transforming, visualizing, and modeling the datasets; Started as a single data science course at first; then, the courses taught have expanded to cover various aspects of data, such as Big data systems and Data-driven decision-making. It is currently in its third year.
* Instructed machine learning models for classification (*decision tree, random forest, K-NN, Naive Bayes, logit model, support vector machines*) and for regression (*simple linear, polynomial, and multivariate*); Advised students' projects handling variance (k-fold cross-validation, regularization, bagging) and bias (parameter tuning, feature selection, boosting) in prediction models; Tested and evaluated the performances of classifiers (*accuracy, precision, recall, ROC curv*e) and regression models (*MSE, RMSE, MAE, and coefficient of determination*) and selected the best parameters for projects; All data-focused courses have been evaluated as "A" s from course takers.

Feb 2011-current, *Research Fellow*, Korea Institute for Defense Analyses

* **Open-sourced text data analytics for discovering actors' patterns in G2G deals** [(English)](https://ijb.cyut.edu.tw/var/file/10/1010/img/927/V27N3-4IJB-2021-1006.pdf): Conducted media research using database retrieval systems, e.g., LexisNexis, Newspaper Source Plus, National Newspaper Index, Factiva, Proquest, and Google advanced search for open-source investigations; Used R for text mining on media articles applying topic models (Latent Dirichlet Allocation and Correlated Topic Model) to connect the dots that help identify actors and explain their behaviors in an arms deal market; Made recommendations to support an improved decision in a defense G2G deal; Published a Scopus-indexed journal based on the outcome.
* **Future Policy for Military Unmanned System** [**(Korean)**](https://www.kida.re.kr/frt/board/frtNormalBoardDetail.do?sidx=382&idx=1982&depth=3&lang=kr): Helped the Ministry of National Defense (MND) write the document, 'The Future Direction of the Military Unmanned System.'; Performed all-source investigations about the future civil/commercial drone market projection by contacting LinkedIn connections from four US-based consultants; Suggested the resource planning solution to incorporate drones, AI, robots, and sensing & mobility technologies into military forces; Presented the project proposal to high officials from the government at the [Agenda Forum 2022](https://www.yna.co.kr/view/AKR20220803075900504?input=1195m); Won the Minister of Defense Award in 2022
* **Policy study for military use of civil unmanned aerial systems** [**(English)**](https://www.kida.re.kr/frt/board/frtNormalBoardDetail.do?sidx=2326&idx=27&depth=3&lang=kr): Prepared a policy memo to acquire and operate commercial drones coordinating the current domestic information and communication technology infrastructure; Suggested drone classification systems based on technological specifications; Researched the policy & regulations of civil drones about the classification and airworthiness framework; Surveyed 150 drone operators for their use cases, performance, and roadblocks for broader applications; Appointed as an advisor to the Unmanned System Development Committee of MND in 2021.
* **Investment feasibility study for defense procurement programs:** Conducted feasibility studies for budget recommendations reported to the Government Investment Advisory Council, Congress, and the Ministry of Finance; Analyzed each investment alternative's technological and economic spillover effects by applying an input-output model, econometric model, total factor productivity, and analytic hierarchy process.

**Education**

* 2019, The State University of New York at Stony Brook, New York, Ph.D., Technology Policy and Innovation
* 2010, Korea Advanced Institute of Science and Technology, Seoul, South Korea, MBA.
* 2004, Sogang University, Seoul, South Korea, BA

**Other Professional Experience**

2009-2011, *Sr. Staff*, Seoul Office, Korea Asset Management Corporation

* Managed state-owned properties including Project Finance (PF) collateralized debt obligations, Asset Backed Securities (ABS), Non-Performing Loan (NPL), and national real estates
* Examined and applied valuation models to help increase the value of acquired national assets and employed optimal administration approaches for national properties under the current act.

Feb.-Sep. 2009, *Analyst (Intern)*, Michigan Venture Capital

* Applied valuation models (Excel spreadsheet) to determine fair values of project/equity financing alternatives.

2004-2007, *Staff*, PE Business Unit Hanwha Chemical Corporation

* Managed business to business customer credit transactions and analyzed clients' financial statements; Selected as a beneficiary of the company-wide R&D Knowledge Spillover Facilitation Program
* Analyzed up and downstream production yields of the naphtha, ethylene, and polymers manufacturing industry.

2000-2002, *Sergeant*, The 1st Signal Brigade, The 8th US Army

* Served as an operator of the Brigade NBC room and led the company headquarters personnel as a Senior KATUSA (Korean Augmentation Troops to the United States Army).

**Selected Publications**

Journals, Conference proceedings & Working papers

* Kim, S., and Sheikh, N. (2022) [Behavior patterns of three archetypal arms suppliers based on empirical media analysis of the First Korean Fighter Jet Program](https://ijb.cyut.edu.tw/var/file/10/1010/img/927/V27N3-4IJB-2021-1006.pdf). *International Journal of Business.* Premier Publishing.
* Kim, S. & Sheikh, N. J. (2022). [Acquisition of commercial-off-the-shelf (COTS) unmanned aerial systems: lessons learned from the South Korean military](https://ieeexplore.ieee.org/document/9882659). In *2022 Portland International Conference on Management of Engineering and Technology (PICMET).* IEEE*.*
* Kim, S., Park H., Kim, J., and Min, C. (2021) [*System safety for acquisition programs*.](https://www.kida.re.kr/frt/board/frtNormalBoardDetail.do?sidx=2326&idx=39&depth=3&lang=kr) Seoul: Korea Institute for Defense Analyses, KIDA press.
* Kim, S., Choi, G., Jin, A., and Yoon, H. (2020) [*Acquisition and administration of commercial drones.*](https://www.kida.re.kr/frt/board/frtNormalBoardDetail.do?sidx=2326&idx=27&depth=3&lang=kr) Seoul: Korea Institute for Defense Analyses, KIDA press.
* Kim, S., Sheikh, N., and Stokes, G. (2019). [Assessment of arms import policies using a hierarchical decision model and expert judgments](https://www.worldscientific.com/doi/abs/10.1142/S0219877019500457): case study of South Korean arms procurement organizations. *International Journal of Innovation and Technology Management*, *16*(6). World Scientific.
* Kim, S., & Sheikh, N. J. (2018, August). [Developing a decision model framework to assess arms supplier policies.](https://ieeexplore.ieee.org/document/8481801) In *2018 Portland International Conference on Management of Engineering and Technology (PICMET)* (pp. 1-15). IEEE.
* Kim, S., & Sheikh, N. J. (2017, July). [Assessment of arms import policies: literature review.](https://ieeexplore.ieee.org/document/8125251) In *2017 Portland International Conference on Management of Engineering and Technology (PICMET)* (pp. 1-12). IEEE.
* Kim, S. (2015). [Policy implications for third-tier countries considering ACTD programs: South Korea as a case study](https://doi.org/10.1016/j.techsoc.2014.11.001). *Technology in Society*, *41*, 45-53. Elsevier.

Computer software & Web apps

* Kim, S. (2023). [Variables affecting monthly earnings: data from 1980 for 935 individuals](https://sjkim2357.shinyapps.io/Variables_affecting_earnings/). [R Shiny app.]
* Kim, S. (2023). [Mall customer analysis project](https://sjkim2357.shinyapps.io/Mall_customer_analysis_project/). [R Shiny app.]
* Kim, S. and Min, S. (2022). [Web-based pairwise comparison method](https://pairwisecomparison.github.io/NewPCM/).