Ministry of Science and ICT

IITP Institute of Information & Communications Technology Planning & Evaluation

APPLICATION FORM
(JOINT RESEARCH)
HIGH POTENTIAL INDIVIDUALS GLOBAL TRAINING PROGRAM)

AGREEMENT

As stated above, I submit this application form to IITP that conducts "High Potential Individuals Global Training Program" supported by Ministry of Science, ICT in South Korea. IITP may disclose the information below to the public for the purpose of providing information and matching a research partnership between your institute and a Korean university.

* IITP : Institute for Information & communications Technology Planning & Evaluation

Printed Name of Chief of Research	Hyoung Suk Shim	Date(mm-dd-yyyy)	02-16-2020
Signature of Chief of Research			

☞ ***(Note)*** *This application is to identify the willingness to participate in this research and to find a research partnership for research institutes in Korea. Therefore, in its sole discretion, it is acceptable to contain only minimal information. (max. 3 pages)*

1. Research Title	Big Data Analytics for Health-care Markets						
2. Research Area	**A.I.**	**Big Data**	**Cloud Computing**	**Block Chain**	**AR/ VR**	**ICT/SW Convergence**	**Other ICT /SW**
		X					
3. Chief of research	Title	Assistant Professor		Contact	E-mail : Hyoungsuk.Shim@csi.cuny.edu		
	Name	Hyoung Suk Shim			Tel : +1-347-735-3977		
4. Affiliation	Name	City University of New York College of Staten Island		Classification	(X) University ( ) Research Institute ( ) Industry ( ) ETC.		
5. Capacity for students (5 or less)	2-3		**Support for students *(all necessary)***		(X) Visa support (X) Research Mentoring (X) Research Space (X) Accessibility to Research equipment		

6. Research Objective	We plan to apply Big Data Analytics techniques performing empirical analysis of health-care market using health-care big data provided by the Korean National Health Insurance Service. We focus particularly on applying theories and tools of empirical industrial organization to understand market structure and resource allocation mechanism of the Korean health-care market.
7. Research Summary	Research on health-care market behaviors have recently been growing in many western developed countries, and many of them have led to reform or change health-care policies. The Patient Protection and Affordable Care Act (ACA) in the United States is an example. Since its enactment in 2010, the ACA has always been one of major issues in political campaigns and elections. The English NHS reform in 2006 is another example of the health-care policy debate with relevant research. The English NHS introduced reforms improving market outcomes, where it is designed to increase choice and competition for hospital care. The main difficulty for the health-care market research was finding relevant dataset to perform empirical observations and examinations. In the western countries, private sectors play a main role suppling health-care services, and thus available data for the researchers are difficult to find. The size of a dataset for health-care market, in addition, is mostly too big to be used in ordinary statistical computing software packages. Furthermore, analysis of health care markets demands heavy computation to examine because the market has multi-layer with lots of unobservable behaviors interacting simultaneously. This research proposal plans to apply Big Data Analytics techniques performing analysis of health-care market using big data on health care provided by the Korean National Health Insurance Service. We focus particularly on applying the theory and tools of empirical industrial organization to understand the market structure and organization of the Korean health-care market. The intellectual merit of this research is to understand resource allocation mechanism in the Korean health-care market, where there is only one insurer serving for the entire population. Hospitals' managerial decision of how to assign available beds, hire doctors and nurses by department can be a plausible example. It is interesting and meaningful research question because few studies have examined hospital behavior as a profit-seeking firm, especially with a single insurer and a regulator like in Korea. From this research we expect that these hospitals' managerial decisions can be evaluated whether the decisions are socially efficient in a way that health-care services are provided to people who demand the most. This expected research outcome can give policy implications and suggestions for improving health-care market as its broader impact. The PI and the intended partner in Korea have potential to achieve the goal for this research. First, the PI has focused on research on large-scale statistical computing using supercomputer and its applications for empirical economics research. And, the co-PI at the partner institute has done in research on health-care policy evaluation using the Korean health-care big data. Finally, the PI has designed and managed a graduate program in Big Data Analytics in the United States as a graduate coordinator, and the co-PI has advised up to Ph.D. level students in health-care policy field.

8. Need for funding from Korean government	For health-care market research, Korea has two distinctive advantages that any other countries cannot provide to the researchers. First, hospitals in Korea are predominantly private, the fraction of private hospital in Korea is 80%, whereas the health insurance market is monopoly by the public universal healthcare. Market for physicians and hospitals in Korea thus become more physician-induced demand oriented and rent-seeking, and supply for physician also becomes market-oriented. This is quite unique characteristics of a healthcare market. Understanding resource allocation mechanism and its outcome would be an important research subject not only in economics but also social science in general and health-care policy study. Second, the Korean health insurance service provides publicly available healthcare Big Data. To our best knowledge, no other countries provide micro-level healthcare data for the entire population to the public. The high potential individuals global training program will be mutually beneficial to our research and joined researchers from Korea. Having support from researchers whose knowledgeable in Korean health-care market and the dataset is one of crucial factors for the project being successful. Because, the data are unavoidably provided in Korean, and the context is most likely based Korean health-care market institution. Throughout this project, in addition, the joined researchers will learn and experience advanced research methods in big data analytics, econometrics, and large-scale statistical computing. The most remarkable advantage for the researchers is to learn and practice how to use supercomputer system for statistical computing.
9. Request for Korean Universities	City University of New York, the PI's institute, is a public research university funded jointly by New York State and City governments. City University of New York has been invited researchers from outside of countries. The joined researchers for this project will obtain J-type VISA status from the U.S. Homeland Security as visiting researchers at the City University of New York under the PI's supervision.