



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

Soolyeon Cho

Date(mm-dd-yyyy)

02-15-2020

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	Development of platform of AI-Based Heating and cooling energy prediction model for optimal control of HVAC system						
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	Associate Professor		Contact	E-mail : soolyeon_cho@ncsu.edu		
	Name	Soolyeon Cho			Tel : +1-979-422-2499		
4. Affiliation	Name	North Carolina State University		Classification	(X) University () Research Institute () Industry () ETC.		
5. Capacity for students (5 or less)	5		Support for students (all necessary)		(X) Visa support (X) Research Mentoring (X) Research Space (X) Accessibility to Research equipment		
6. Research Objective	<p>- The ultimate goal of this research is to develop an AI-based optimization model to implement a zero-energy building.</p> <p>- To achieve the aim of the research is, this research will be developed the platform which</p>						



	<p>is linked with simulation modeling and AI-Based optimal control.</p>
<p>7. Research Summary</p>	<ul style="list-style-type: none"> - Most of the previous research was developed AI-based optimal control and simulation model separately; however, the simulation program and control logic needs to be run simultaneously while sharing mutual data between simulation program and control logic. - In this research project, we will develop the BCVTB platform, which can link the simulation programs, such as EnergyPlus and TRNSYS, with computer languages, such as C+ and Python. - Through the BCVTB platform, AI-based control is applied directly to the simulation model. After AI-based control is applied, the simulation program will be run automatically. - Optimal control will be provided depending on the variation of the simulation results.
<p>8. Need for funding from Korean government</p>	<ul style="list-style-type: none"> - In order to implement a zero-energy building for the existing building, it is essential to install an efficient system, but there is a cost problem to replace from the existing system to an efficient system. - To overcome the cost problem, the optimal operation of the existing system is essential. - To operate system optimally, control logic needs to be used actual or calibrated simulation results, and different controls should be provided depending on the condition of the buildings. - The control logic which is connected in the platform will provide the optimal control based on the changed simulation results when simulation modeling changes. - This platform can be used to the existing building which has actual building energy consumption data to operate the system efficiently.
<p>9. Request for Korean Universities</p>	<ul style="list-style-type: none"> - The selection of students studying abroad should be conducted after mutual consultation and cooperate to prepare for VISA. - Students need to have knowledge about building energy, HVAC system, and simulation program.