Resume

1. Resume

Applying Department (only one)	SCHOOL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE	
Area of Specialty	Wireless Communications and Signal Processing	
Name	Last name	SINGH
	First name	PANKAJ
Woman Scientist/Technician	☐Check here if applicable ※ This is to confirm whether the applicant is a woman scientist/technician under Article 13 (Persons Subject to Affirmative Action) of the Enforcement Decree of the Act on Fostering and Supporting Women Scientists and Technicians.	
Official Date of Ph.D. (Date in the Certificate)	22-Feb-2019	

■ Education

Dates		Specialized Field	Degree
From	To		
2014-09-01	2019-02-22	Electronic Engineering	M.S-Ph. D.
2004-08-01	2009-06-11	Electronics and Communication	BS

※Please do not write your school name.

■ Experience

Dates		Institution and Address	Position	Remarks
From	To			
2019-03-01	2019-08-31	Yeungnam University, 280 Daehak-ro, Gyeongsan-si, Gyeongsangbuk-do	**Postdoctoral Fellow**	
(Assigned task: Please description briefly) **-teaching at the university** **-faithfully perform the assigned research projects**				

2019-09-01	current	Yeungnam University, 280 Daehak-ro, Gyeongsan-si, Gyeongsangbuk-do	**International Research Professor (Assistant Professor)**	
(Assigned task: Please description briefly) **- Publish a minimum of two articles per contract year in the SSCI, A&HCI or SCIE journal as a main author (either a first author or a corresponding author).** **- Take three class hours per week during the 15 weeks of the spring or fall semester.**				
2010-08-01	2014-08-14	Draft Air (I) Pvt. Ltd., Ahemdabad, Gujarat, India	**Project Engineer**	
(Assigned task: Please description briefly) **- Installation and commissioning of HVAC systems in heavy electrical plants.**				

■ Honors and Awards

Recognition Details	Dates	Remarks
National Research Foundation of Korea (NRF) Grant, Award number: 2022R1G1A1004799	2022-2025	
Outstanding Graduate Student Award (in the Daegu and Gyeongbuk Province)	2018.10	Awarded by IEIE
Ministry of Education, Korean Govt. Scholarship	2014-2019	
Indian Air Force Personnel Scholarship, Govt. of India	2014–2019	

■ List of References (* including Advisor / 3 or more than three references)

1. Sung-Yoon Jung (정성윤), Professor, Department of Electronics Engineering, Yeungnam University, Gyeongsan, Korea (Advisor)

2 Byung Wook Kim (김병욱), Assistant Professor, Department of Information and Communication Engineering, Changwon National University, Changwon-si, Korea (Co-Advisor)

3. Hyun Chul Choi (최현철), Professor, Department of Electronics Engineering, Yeungnam University, Gyeongsan, Korea

■ Additional Information

- Ph.D. Dissertation Title:

- Modulation and Multiple Access for Wireless Nanocommunications Networks in the Terahertz Band

Publication List

The Most Relevant Publications (up to 5)

Classify	Details (title, authors, journal name, volume, pages, and publication date, etc.)	Author/Inventor		Journal	
		Number (Include yourself)	Type	IF	Category (Ranking)
Paper	Pankaj Singh and Sung-Yoon Jung, "Multi-level pulse position modulation scheme for enhancing link capacity in electromagnetic nanocommunication networks," ICT Express, 2022 (Article in Press)	2	FA	4.754	Computer Science, Information Systems (50/164)
Paper	Pankaj Singh and Sung-Yoon Jung, "Data Decoding based on Iterative Spectral Image Reconstruction for Display Field Communications," ICT Express, vol. 7, no. 3, pp. 392-397, 2021.	2	FA	4.754	Computer Science, Information Systems (50/164)
Paper	Pankaj Singh, Huijin Jeon, Sookeun Yun, Byung Wook Kim, and Sung-Yoon Jung, "Vehicle Positioning Based on Optical Camera Communication in V2I Environments," Computers, Materials & Continua, vol. 72, no. 2, pp. 2927-2945, 2022.	5	FA	3.860	Computer Science, Information Systems (69/164)
Paper	Muhammad Shafiq, Pankaj Singh, Imran Ashraf et al., "Ranked Sense Multiple Access Control Protocol for Multichannel Cognitive Radio-Based IoT Networks," Sensors, vol. 19, no. 7, p. 1703, Apr. 2019.	8	ETC	3.847	Engineering, Electrical and Electronic (95/276)
Paper	Pankaj Singh and Sung-Yoon Jung, "Multilevel Pulse Position Modulation With Level Trimming for Electromagnetic Nanocommunications in the Terahertz Band," IEEE Access, vol. 10, pp. 94158-94168, 2022.	2	FA	3.476	Computer Science, Information Systems (105/276)

2. Achievement

1) Papers in international journal

No	Details (title, authors, journal name, volume, pages, and publication date)	Author Type	Journal	
			IF	Category (Ranking)
1	Pankaj Singh and Sung-Yoon Jung, ″Multilevel Pulse Position Modulation With Level Trimming for Electromagnetic Nanocommunications in the Terahertz Band,″ IEEE Access, vol. 10, pp. 94158-94168, 2022.	FA	3.476	Telecommunications (43/93)
2	Pankaj Singh and Sung-Yoon Jung, "Multi-level pulse position modulation scheme for enhancing link capacity in electromagnetic nanocommunication networks," ICT Express, in press, 2022.	FA	4.754	Telecommunications (28/93)
3	Vivek Kumar Sinha, Divya Anand, Sandeep Kaur, Pankaj Singh, and Irene Delgado Noya, "Security Verification of Social Network Model Using Improved Three-Party Authenticated Key Exchange Protocol," Symmetry, vol. 14, no. 8, pp. 1567, 2022.	CA	2.940	Multidisciplinary Sciences (34/74)
4	Pankaj Singh, Huijin Jeon, Sookeun Yun, Byung Wook Kim, and Sung-Yoon Jung, "Vehicle Positioning Based on Optical Camera Communication in V2I Environments," Computers, Materials & Continua, vol. 72, no. 2, pp. 2927-2945, 2022.	FA	3.860	Computer Science, Information Systems (69/164)
5	Pankaj Singh and Sung-Yoon Jung, "Data Decoding based on Iterative Spectral Image Reconstruction for Display Field Communications," ICT Express, vol. 7, no. 3, pp. 392-397, 2021.	FA	4.754	Telecommunications (28/93)
6	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "DS-OOK for Terahertz Band Nanonetworks," National Academy Science Letters, vol. 44, no. 1, pp. 43-46, 2021.	FA	0.649	Multi-disciplinary Sciences (68/74)
7	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "Performance Analysis of Display Field Communication with Advanced Receivers," Wireless Communications and Mobile Computing, vol. 2020, Article ID 3657309, 14 pages, 2020.	FA	2.146	Telecommunications (62/93)
8	Muhammad Shafiq, Pankaj Singh, Imran Ashraf et al., "Ranked Sense Multiple Access Control Protocol for Multichannel Cognitive Radio-Based IoT Networks," Sensors, vol. 19, no. 7, p. 1703, Apr. 2019.	ETC	3.847	Engineering, Electrical & Electronic (95/276)

9	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "Compressed Detection for Pulse-Based Communications in the Terahertz Band," Wireless Communications and Mobile Computing, vol. 2018, Article ID 2408496, 10 pages, 2018.	FA	2.146	Telecommunications (62/93)
10	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "TH-PPM with noncoherent detection for multiple access in electromagnetic wireless nanocommunications," Nano Communication Networks, vol. 17, pp. 1–13, 2018.	FA	2.783	Telecommunications (52/93)
11	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "Preamble-based synchronisation scheme for electromagnetic wireless nanocommunications," IET Communications, vol. 11, no. 7, pp. 1097-1105, 2017.	FA	1.345	Engineering, Electrical & Electronic (225/276)

2) Proceedings at international conferences

No	Details (title, authors, name of conference, volume, pages, and presented date, etc.)	Author Type
1	Pankaj Singh and Sung-Yoon Jung, "Nanonetworks: Next Frontier in Wireless Communications," in Proc. 2022 IEEE 13th International Conference on ICT Convergence (ICTC), IEEE, Jeju Island, South Korea, 19–21 October 2022, pp. XXX-XXX	FA
2	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "Iterative Spectral Image Reconstruction-Based Display Field Communication Using Advanced Receiver," in Proc. 2022 IEEE International Conference on Communications Workshops (ICC Workshops), IEEE, Seoul, South Korea, 16–20 May 2022, pp. 616-621	FA
3	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "Non-Coherent Symbol Detection with TOA Estimation for Nanocommunication Networks," in Proc. IEEE 89th Vehicular Technology Conference (VTC-Spring), IEEE, Kuala Lumpur, Malaysia, 28 April – 1 May 2019, pp. 1-5	FA
4	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "Display Field Communications: A novel approach to exploit D2C link for smart-contents transmission," in "Proc. 3rd International Conference and Exhibition on Visible Light Communications 2019 (ICEVLC2019)", Seoul, South Korea, March 2019	FA

3) Proceedings at Korean conferences

No	Details (title, authors, name of conference, volume, pages, and presented date, etc.)	Author Type
1	Pankaj Singh, Byung Wook Kim, and Sung-Yoon Jung, "Display Field Communications: A spectral domain data transmission approach over screen-camera links," in Proc. "3rd Korean LED and Optoelectronics Science Conference 2019 (KSLOE2019)", Gyeongsan, South Korea, February 2019	FA

4) Lectures (For the last five years)

No	Semester/Year	Course Name	Hour/week	Remark
1	Fall 2019	Signals and Systems	3	Lecture evaluation score: 85.57/100
2	Spring 2020	Digital Signal Processing	3	Lecture evaluation Score: 93.00/100
3	Spring 2021	Digital Signal Processing	3	Lecture evaluation Score: 92.79/100

8) Research Grant (Principal Investigator)

(US $ or thousand Won)

No.	Project No	Period	Funding Organization / Program Title	Project Title	Total grant (KRW)	Remarks
1	2022R1G1A1004799	01/03/2022~ 02/28/2025	National Research Foundation of Korea (한국연구재단) / Starting Grants (생애첫연구)	Physical layer solutions for nanonetworks in the terahertz band	30M	($21,344)

9) Additional achievements (If applicable)

No	Details	documentary evidence
1	Outstanding Graduate Student Award (Fall 2018) in the Daegu and Gyeongbuk Province by the Institute of Electronics and Information Engineers (IEIE), Daegu, South Korea.	Best Paper award certificate

3. Research Plan

* Please write at least one page on A4 size paper. English or Korean

1. Terahertz band-based nanocommunication is a novel communication paradigm, which can revolutionize many sectors in nanotechnology and its applications. Terahertz-band based nanonetworks are essential part of future wireless communications including 6G and B6G networks. Nanonetworks are the enabling technology of long-awaited applications such as advanced health monitoring systems or high performance distributed nanocomputing architectures. My current NRF project is also based on nanonetworks. Therefore, during the current period of my research grant, my research will mainly be focused on nanocommunication networks. In particular, my focus will be:
   - 1차년도(2023년)
     - Develop the coding schemes for the THz nanocommunication to ensure low-power consumption
   - 2차년도 (2024년)
     - Research on channel estimation techniques for nanonetworks

2. In addition, I am also working on optical camera communications, particularly, display-to-camera communications. Display to camera communication is an interesting application of visible light communication, that can have applications in several domains, e.g. in vehicular communications. Therefore, I would like to work on display-to-camera communications.

3. I am also interested in molecular communications and have worked as a co-author on some papers. This area of wireless communication also interests me.

4. Lecture Plan

* Please write at least one page on A4 size paper. English or Korean

I have almost three semesters of experience of teaching in Korea including the subjects like signals and systems and digital signal processing. Therefore, I am having a plan to teach to undergraduate students of the department of electrical, electronics and IT. These subjects are basic to electrical engineering. In addition, graduate level courses are also of interest to me. I am planning to teach the following courses:

- Undergraduate level
    - Signals and Systems
    - Digital Signal Processing
    - Digital communication
    - Digital Image Processing
    - Communication Engineering
- Graduate level
    - Probability and Random Processes
    - Advanced Wireless Mobile Communications
    - Estimation Theory for Wireless Communications
    - Optical Communication
    - Information Theory and Coding