Job Opportunity

Research Domains		Research Areas
Device & System	**①** **Processor & SOC Architecture**	- Processor & Accelerator Design (Front-End) · Neural Processor, DSP, GPU, CPU, MCU Design · Accelerator, Multimedia Processor Design · SOC architecture, C-modeling · Memory system & Architecture · RTL,VHDL, Verilog HDL, Verilog-A - ASIC, FPGA,VLSI, Digital circuits - Low power SOC & Circuit design - Compiler - SOC & System simulation - Algorithm optimization for hardware

	②
	Recognition & Understanding
		- Computer Vision, Augmented Reality
		 · Computer graphics, Photo-realistic rendering, 2D/3D Image processing
		  3D Modeling , 3D Map Construction, Scene Understanding,
		  Computational imaging
		 · Pattern Recognition, Visual Tracking, Object Recognition, Detection,
		  Emotion Recognition, Motion estimation, Classification and Clustering
		 · De-noising, De-blurring
		- Visual Recognition and Scene Understanding
		 · Pattern Recognition, Object Detection & Tracking
		 · Clustering, Classification
		 · Image Captioning, Visual Question Answering
		- Speech and Natural Language Processing
		 · Speech Recognition, Machine Translation
		 · Natural Language Understanding, Language Modeling
		 · Dialog Management, Question Answering
		 · Audio signal processing, Speech signal processing
		 · Information Retrieval, Recommendation, Search
		- Emotion Recognition
		 · Facial Expression Recognition, Gaze Estimation, Body Posture/Behavior
		  Recognition
		 · Voice Emotion Recognition, Speaker Verification
		 · Sentiment Analysis, Text Analysis

Research Domains		Research Areas
Device & System	③ **Autonomous Driving**	- Autonomous Car, Robot, Drone, - Localization , Mapping, SLAM - Sensor Fusion - Tracking, Prediction Algorithm - Planning & Control Theory & Algorithm - Vehicle Dynamics and Control - ADAS, Functional Safety - Operating System, Embedded System Design - 3D Scene Construction - Automotive ECU Design

	④ **Deep Learning/ AI Theory** **Analysis & Simulations**	- Deep Learning, Statistical Machine Learning, Artificial Intelligence
		  · Supervised Learning, Unsupervised Learning, Reinforcement Learning
		- Deep Generative Models & Neural Memory Networks
		  · Bayesian, Variational Bayes, Markov Chain Monte Carlo (MCMC)
		- Large-scale Mathematical Analysis and Algorithms
		- Simulation, Mathematical Modeling, Statistics, Stochastic Process, Physics, Mathematics, Data Mining, Computational Science, Computer Science, Information Theory, Signal Processing, Optimization
		- High Performance Computing, Distributed Computing

	⑤ **Radar SW/HW**	- Radar algorithm
		  · Signal processing, distance & velocity estimation, object detection, object classification
		- Radar imaging, SAR imaging
		- RF HW system design
		  · mmWave or high frequency RF HW system design
		  · Antenna design

	⑥ **Mobile Healthcare**	- Mobile Healthcare Sensor
		  · Biophotonics-related experimentalists
		  · Experience in high precision optical measurement and/or Spectroscopy
		  · Photonics simulation (ray-optic, monte-carlo simulation, etc)
		- Bio Signal Processing
		  · Feature extraction and Optimization
		  · Information mining from bio-medical data
		  · Bio data based deep learning
		- Application of Healthcare System
		  · Human physiology
		  · Analysis of health signal
		  · Bioinformatics
		  · Chemometrics

Research Domains		Research Areas
Device & System	⑦ **Meta Photonics/ Photonic device**	- Active metasurface theory, simulation & Experiment · Active metasurface design for phase modulation, optical device simulation SW (ex. FDTD, FEM, RCWA, TCAD, Sentaurus, etc.), optimization · Knowledge on electro-optic materials (TCO, PCM, TMD, III-V etc.) · Experience in optical design - Silicon photonics device design · Waveguide optics simulation, Optical device simulation/Evaluation, Diffractive optics - Experience in TOF Sensor optical system design, Laser optics, optical system design using laser diode, photo detector - Experience in metamaterials, plasmonics, photonic crystal, spectroscopic system, micro spectroscopic system, and nanophotonics
	⑧ **Graphene Device**	- Organic synthesis · Total Synthesis capability · Experience in C-C bond formation reaction research · Experience in synthesis of Electronic/Medical materials, polymer, dendrimer · CNT, Graphene functionalization experience
	⑨ **Micro Sensor & Application system**	- Analog/Digital Circuit · Low power, High SNR Signal Conditioning · Filter, Amp, ADC/DAC Design · Hardware implementation (PCB, ASIC) - Sensor Signal Processing & Algorithm · Feature extraction, Adaptive filter, Noise suppression, etc. · Machine learning (ex. Speech/ speaker recognition, CASA etc.) · Multi-channel data handling - Application System Implementation · Firmware, FPGA/DSP based system integration · Data transfer, Controller, GUI development · Windows/Android/Tizen app. SW · JAVA, C++, Matlab, Labview, etc. - MEMS/NEMS Design & fabrication · Electromechanical simulation (COMSOL, ANSYS etc.) · Experience in Piezoelectric/ Capacitive/ Strain sensor fabrication

Research Domains		Research Areas
Material	① **Inorganic Materials**	- Nano structured materials and Applications · Quantum dot, Metal, Inorganic nano structure synthesis/characterization and Device Fabrication - Development & fabrication of inorganic powder
	② **Organic Materials**	- Organic Device Physics and Analysis - Organic Sensor Material Simulation and Synthesis - Organic Emitting and Charge Transporting Material Design/Synthesis
	③ **Functional Polymer**	- Organic Material synthesis - Polymeric Materials for optical applications - Organic-Inorganic Hybrid (Composite) - EV & Next Generation Network Communication Related Material
	④ **Battery Materials**	- Next Generation Battery - Organic materials design and Synthesis (polymer and ionic liquid) - xEV Battery Pack Design, BMS HW Architecture & System SW
	⑤ **Bio Materials**	- Enzyme/strain engineering - Fermentation process engineering - In silico metabolic simulation

Research Domains		Research Areas

Platform Technology	**①**
	Computational Science
		- Machine learning for materials research
		  · Developing algorithms for property prediction, data analysis, materials design, and synthesis planning
		  · Developing algorithms for explainable artificial intelligence
		- Ab-initio/First-principles expertise
		  · New methodologies for understanding material properties (especially, for organic electronics, optoelectronics, spectroscopy, etc.)
		  · Materials design based on electronic structure calculations and experiments (especially, using chemical bonding analysis, chemoinformatics, etc.)

	②
	Analytical Science
		- 3D structural analysis using Electron Microscopy & Atom Probe Tomography
		  · Materials Science/Physics
		  · Strong Background in Crystallography
		  · Electron Microscopy / Atom Probe Tomography
		    → Correlation between Electron Microscopy and Atom Probe Tomography

	③
	High Throughput Processing
		- Thin film process & semiconductor device research
		  · Research/development experience required on thin film deposition
		    → Epitaxial film growth, MBE (Molecular Beam Epitaxy), PLD (Pulsed Laser Deposition), ALD (Atomic Layer Deposition)
		  · Material screening process applicable to semiconductor device
		  · Strong background on device physics
		  · Potentially determining ways to develop new thin film materials/devices with new or specific properties for use

IT Planning	**IT Specialist**
	(Business Analyst)
		- Plan & Direct the development of enterprise IT systems related in R&D process.
		  · Identifies and recommends to senior management improvements that can be made to enterprise systems and services
		  · Implements business system plans, directing development, release, and maintenance of company business application and process control systems
		  · Planning and managing day-to-day activities associated with design, development, deployment, and recoverability of business applications