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