

Job Opportunity

Research Domains		Research Areas
Device & System	① Processor & SOC Architecture	<ul style="list-style-type: none"> - Processor & Accelerator Design (Front-End) <ul style="list-style-type: none"> · 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	<ul style="list-style-type: none"> - Computer Vision, Augmented Reality <ul style="list-style-type: none"> · 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 <ul style="list-style-type: none"> · De-noising, De-blurring - Visual Recognition and Scene Understanding <ul style="list-style-type: none"> · Pattern Recognition, Object Detection & Tracking · Clustering, Classification · Image Captioning, Visual Question Answering - Speech and Natural Language Processing <ul style="list-style-type: none"> · 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 <ul style="list-style-type: none"> · 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	<ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> - Deep Learning, Statistical Machine Learning, Artificial Intelligence <ul style="list-style-type: none"> · Supervised Learning, Unsupervised Learning, Reinforcement Learning - Deep Generative Models & Neural Memory Networks <ul style="list-style-type: none"> · 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	<ul style="list-style-type: none"> - Radar imaging, SAR imaging - RF HW system design <ul style="list-style-type: none"> · mmWave or high frequency RF HW system design · Antenna design - Radar baseband HW design <ul style="list-style-type: none"> · Digital processing system, FPGA board design and programming - Radar algorithm <ul style="list-style-type: none"> · Signal processing, distance & velocity estimation, object detection, object classification
	⑥ Mobile Healthcare	<ul style="list-style-type: none"> - Mobile Healthcare Sensor <ul style="list-style-type: none"> · Biophotonics-related experimentalists · Experience in high precision optical measurement and/or Spectroscopy · Photonics simulation (ray-optic, monte-carlo simulation, etc) - Bio Signal Processing <ul style="list-style-type: none"> · Feature extraction and Optimization · Information mining from bio-medical data · Bio data based deep learning - Application of Healthcare System <ul style="list-style-type: none"> · Human physiology · Analysis of health signal · Bioinformatics · Chemometrics

Research Domains		Research Areas
Device & System	⑦ Meta- Photonics/ Photonic device	<ul style="list-style-type: none"> - Active metasurface theory, simulation & Experiment <ul style="list-style-type: none"> · 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 <ul style="list-style-type: none"> · 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	<ul style="list-style-type: none"> - Thin Film Deposition <ul style="list-style-type: none"> · ALD, Sputter, CVD · 2D growth experience including Graphene, TMD (ex MoS₂), h-BN · Experience in epi-growth of III-V semiconductor compound (ex. GaN) - Organic synthesis <ul style="list-style-type: none"> · 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	<ul style="list-style-type: none"> - Analog/Digital Circuit <ul style="list-style-type: none"> · Low power, High SNR Signal Conditioning · Filter, Amp, ADC/DAC Design · Hardware implementation (PCB, ASIC) - Sensor Signal Processing & Algorithm <ul style="list-style-type: none"> · Feature extraction, Adaptive filter, Noise suppression, etc. · Machine learning (ex. Speech/ speaker recognition, CASA etc.) · Multi-channel data handling - Application System Implementation <ul style="list-style-type: none"> · 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 <ul style="list-style-type: none"> · Electromechanical simulation (COMSOL, ANSYS etc.) · Experience in Piezoelectric/ Capacitive/ Strain sensor fabrication

Research Domains		Research Areas
Material	① Inorganic Materials	<ul style="list-style-type: none"> - Nano structured materials and Applications <ul style="list-style-type: none"> · Quantum dot, Metal, Inorganic nano structure synthesis/characterization and Device Fabrication - Development & fabrication of inorganic powder
	② Organic Materials	<ul style="list-style-type: none"> - Organic Device Physics and Analysis - Organic Sensor Material Simulation and Synthesis - Organic Emitting and Charge Transporting Material Design/Synthesis
	③ Functional Polymer	<ul style="list-style-type: none"> - Organic Material synthesis - Polymeric Materials for optical applications - Polarization and Retardation materials - Organic-Inorganic Hybrid (Composite) - Curing Chemistry
	④ Battery Materials	<ul style="list-style-type: none"> - Battery Cell/Pack <ul style="list-style-type: none"> · Li-ion Battery Materials · Organic materials design and Synthesis (polymer and ionic liquid) · xEV Battery Pack Design, BMS HW Architecture & System SW
Platform Technology	① Computational Science	<ul style="list-style-type: none"> - Materials Design, Data Analysis and Optimization Using Machine Learning <ul style="list-style-type: none"> · New material design algorithm Development based Machine Learning · High Performance Computing Application <ul style="list-style-type: none"> → computational/data driven system research via algorithms, optimization, and related high performance computation method, SW parallel computing & Optimization · Platform contracture and Development for Machine Learning
	② Analytical Science	<ul style="list-style-type: none"> - Time-resolved spectroscopy <ul style="list-style-type: none"> · Femtosecond laser spectroscopy including multidimensional/absorption/Raman/IR/PL · Optical Microscopy - Structural analysis using Electron Microscopy & Diffraction <ul style="list-style-type: none"> · Strong Background in Crystallography · Microstructural/compositional/chemical Analysis of Organic/Inorganic Materials & Devices