Recruitment Field

Research Domains	Research Areas
① Device & System	**☐ Multimedia Processing** **- Photorealistic Graphics** · 3D Object Surface/Volume Segmentation & Modeling, Geometry/Mesh Processing, 3D Animation Processing, Physics (Continuum, Fluid Dynamics)-Based Modeling, Advanced Global Illumination Real-time Ray Tracing, Radiosity, Photon Mapping, etc, Graphic/Real Object Registration, Modeling and Rendering for Mixed Reality **- Visual Processing** · Depth Estimation, Stereo/Multiview Synthesis, Light Field Rendering, Feature Extraction, Motion Estimation, Super Resolution, Video Signal Processing, Computer Generated Hologram, Display Optics, 3D Display Architecture Design, Human Visual Perception **- Pattern Recognition** · Object Segmentation & Tracking, Object Recognition, Face Recognition, Eye/Gaze Tracking, (Big Data-driven) Machine Learning, (Full-body/Hand) Pose Estimation, 3D Feature Descriptor, 3D Vision Processing, 3D Modeling and Motion Graphics, Strong coding skills in C/C++ required
	☐ Wearable device **- Ultra low power system design** . Analog/RF architecture for communication and bio-signal sensing . Digital logic / processor design . Real time system / OS / Application **- Signal processing and modeling** . Algorithm optimization for low power operation . Mathematical channel modeling
	☐ Holographic Display - Optical Components Design or Architecture (Waveguide etc) - Optical System Design or Architecture (Holographic Display, 3D Display) - Computer Generated Hologram - Holography, Optics - Micro/Nanophotonic component design - Color image processing - Computational photography - Imaging system design
	☐ Mobile Healthcare **- Mobile health sensor / noninvasive detection / Optical System Design** · Excitation/detection Optical Package System · Integrated optics Chip Design · Bio-photonics System Design or Analysis **- Mobile health sensor / Bio-medical engineering** · Physiological signal processing · Detection algorithm

Research Domains	Research Areas
① Device & System Device & System	**☐ Intelligent Computing** **- Machine Learning** · Deep Learning, Statistical Machine Learning, Reinforcement Learning, · On-line Learning, Graphical Models, Pattern Recognition, Inference, Reasoning, · Speech Recognition, Object Recognition, Scene Understanding **- Natural Language Processing** · Language Modeling, Natural Language Understanding, Machine Translation, · Dialog Management, Question Answering, Information Retrieval **- Data Mining & Big Data Analytics** · High-dimensional Data Mining, Temporal Data Mining · High-performance Distributed Computing and Data Analysis **- Mathematical Analysis and Algorithms** · Optimization, Stochastic Processes, Statistical Inference **- Signal Processing** · Information Theory, Statistical Signal Processing, Nonlinear Signal Processing
	☐ Medical **- X-ray / CT** · X-ray Imaging : Image Processing, Image Reconstruction, System Architecture · Detector: Photoconductor material, readout circuit, calibration, detector physics modeling & simulation, validation **- Ultrasound** · Image Processing, 3D Imaging, Beamforming, Pre/Post Processing, Machine Learning, Organ Modeling **- Ultrasound Transducer** . cMUT & pMUT design, fabrication & evaluation
	☐ Brain IT **- Neuromorphic Systems & Algorithms** · Spiking neural network based information processing - theory, modeling, and simulation (sensory processing, pattern recognition, inference, learning, memory) · VLSI chip design (neuromorphic digital/analog circuit design) · Neuromorphic processor design, Neuromorphic sensor design
	☐ Imaging **- X-ray / CT** · X-ray Imaging : Image Processing, Image Reconstruction, System Architecture · Detector: Photoconductor material, readout circuit, calibration, detector physics modeling & simulation, validation **- Ultrasound** · Image Processing, 3D Imaging, Beamforming, Pre/Post Processing, Machine Learning, Organ Modeling

Research Domains	Research Areas
② Materials	☐ **Optical Films for Display** - Polymeric Materials for optical applications - Film fabrication and coating technology - Polarization and retardation materials - Optical Design and Simulation
	☐ **Battery Materials** - Advanced Li-ion, Post Li-ion and novel energy storage/conversion - Inorganic, nanocomposite and metal alloy for ion storage - Organic/polymer design, synthesis and ionic liquid for ion transport - Electrochemical analysis and modeling
	☐ **Battery System** - Electrochemical reaction mechanism and thermal/fluidic behavior analysis - Multiscale modeling and simulation of electrochemical cell - Design of electrochemical cell and battery management system
③ Analytical Science	☐ **Structural analysis of organic/inorganic materials and devices** - Characterization of organic/inorganic materials & devices using electron microscopes based techniques : Microstrucral/compositional/chemical analysis - SEM/EBSD, EPMA, TEM etc.
	☐ **Laser spectroscopy** - Time-resolved Raman, resonance Raman, stimulated Raman, Surface-enhanced Raman spectroscopy - Application of the state-of-the-art Raman techniques to organic and low-dimensional electronic materials - A strong background in laser spectroscopy, particularly ultrafast, nonlinear optical spectroscopy and imaging is required

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