

# Research Theme 2 EMERGING TECHNOLOGIES and INNOVATIONS

The Texas A&M University *research enterprise* encompasses all elements that come together to address critical research needs (basic, applied or translational) including all stakeholders, resources and infrastructure. Delivering outcomes and results that promote knowledge growth and solve or prevent challenges for the public good are the basis for the research enterprise strategic plan.



## SUB-THEMES

### ▶ ARTIFICIAL INTELLIGENCE, LEARNING AND AUTONOMY

#### Examples of Research Areas of Strength/Opportunity within Texas A&M

Machine learning, deep learning, human-machine interactions, sensors, robotics, computer vision, ethics/policy, technology adoption

#### Alignment with National and Texas Legislative Priorities

NSF, NIH, DOD, DARPA, DOED, CHIPS ACT, MULTI-AGENCY R&D, NATIONAL LABS, SBIR/STTR

#### Texas A&M Capacity (Initial Mapping of Alignment with Colleges, Schools, Agencies and Centers/Institutes/Core Facilities)

TEES (COE), CAS, SEHD, AGLR (COALS), PVFA, HSC (SoM, SoP), BUSH, TTI, TAMIDS, SOA, (*GeoSAT*)

### ▶ BIOTECHNOLOGY AND BIOMANUFACTURING

#### Examples of Research Areas of Strength/Opportunity within Texas A&M

Synthetic biology, genomics, gene editing, genetic medicines and RNA/DNA vaccines, biomanufacturing

#### Alignment with National and Texas Legislative Priorities

NSF, NIH, DOE, DOD, DOC, DARPA, CHIPS ACT, MULTI-AGENCY R&D, NATIONAL BIOTECH, SBIR/STTR

#### Texas A&M Capacity (Initial Mapping of Alignment with Colleges, Schools, Agencies and Centers/Institutes/Core Facilities)

CAS, AGLR (COALS, VMBS), HSC (SoM, SoP), TEES, SEHD, *CPT, MIC, TxGEN, AggieFab, MCF, NCTM, SI, CIADM*

### ▶ DATA, VISUALIZATION, AND INFORMATION TECHNOLOGIES

#### Examples of Research Areas of Strength/Opportunity within Texas A&M

Digital twins, computing platforms, visualization, AR/VR technology, LED production stages, communicating with the future, policy

#### Alignment with National and Texas Legislative Priorities

NSF, NIH, USDA, DOC, DARPA, NEH, SBIR/STTR MULTI-AGENCY R&D, NATIONAL SECURITY, TX

#### Texas A&M Capacity (Initial Mapping of Alignment with Colleges, Schools, Agencies and Centers/Institutes/Core Facilities)

CAS, PVFA, SOA, TEES (COE), AGLR (COALS), SEHD, MAYS, BUSH, HSC (SPH), TTI, *HPRC, TAMIDS, ARCHI*

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## SUB-THEMES

### ▶ MICROELECTRONICS AND SEMICONDUCTORS

#### Examples of Research Areas of Strength/Opportunity within Texas A&M

Analog and mixed signal circuits, artificial intelligence hardware, biosensors, brain-inspired computing, integrated photonics, intelligent and cognitive EM sensors, MEMS sensors and actuators, memristors and emergent memory devices, metrology, molecular computing, neuromorphic materials, radiation-hardened electronics, secure edge computing, 5G/6G technology, workforce development

#### Alignment with National and Texas Legislative Priorities

NSF, NIH, DOE, DOD, DOC, DARPA, CHIPS ACT, MULTI-AGENCY R&D, SBIR/STTR, TX

#### Texas A&M Capacity (Initial Mapping of Alignment with Colleges, Schools, Agencies and Centers/Institutes/Core Facilities)

TEES (COE), CAS, MAYS, SEHD, AGLR (COALS), *AggieFab*, *CI*, *HPRC*, *IQSE*, *MCF*, *NESC*, *TAMIDS*

### ▶ QUANTUM SCIENCE AND TECHNOLOGY

#### Examples of Research Areas of Strength/Opportunity within Texas A&M

Quantum sensing, quantum biology, quantum communications, quantum computing

#### Alignment with National and Texas Legislative Priorities

NSF, DOD, DARPA, MULTI-AGENCY R&D

#### Texas A&M Capacity (Initial Mapping of Alignment with Colleges, Schools, Agencies and Centers/Institutes/Core Facilities)

CAS, TEES (COE), AGLR (COALS), *IQSE*