# **DEEPTECH VENTURES**



# Submission for: 2022 Global Consortium of Entrepreneurship Centers Outstanding Contributions to Venture Creation Award



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Purpose, Strategic Goals, Objectives and Intended Target Audience **DeepTech Ventures** (DTV) with TEES Commercialization & Entrepreneurship at Texas A&M University proudly submits this nomination for Outstanding Contributions to Venture Creation award. The overarching purpose and mission of DTV is to create a successful path to venture creation for A&M Engineering Researchers, graduate students and external entrepreneurs wishing to commercialize Texas A&M Engineering intellectual property. Texas A&M Engineering Experiment Station (TEES) is the research, technology transfer and workforce development partner of Texas A&M Engineering and also an independent state agency that is part of the Texas A&M University System, one of the United States' largest higher education systems made up of eight state agencies, 11 universities, and a comprehensive health science center.

Office of Commercialization and Entrepreneurship Innovation Ecosystem

DTV with its primary focus on venture creation and deeptech entrepreneurship is an integral part of the TEES Division of Commercialization & Entrepreneurship (C&E). C&E is responsible for all innovation management and technology commercialization

activities across Texas A&M Engineering, one of the largest engineering research enterprises in the nation. The office has significant experience working on large projects with start-ups, industry and academic partners focused on building and supporting early stage deep-tech companies and also dual use technologies in the national security space . TEES C&E performs the innovation transfer function through three groups: Licensing & IP Management, Deeptech Ventures, and Innovation Ecosystem and executes on all aspects of technology transition from earliest stages of IP protection, licensing, start-up formation and industry consortiums with a focus on advancing deep technologies from ideation to commercialization. DTV is one of the critical components of this innovation engine with its programs spanning from ideation to venture creation and post venture sustainability, and continues to play a critical role in advancing deep tech innovations from lab to marketplace with significant local, national, and global impact. This large venture innovation ecosystem that DTV serves comprises over 800 faculty and research members, more than 20,000 students and supports a research portfolio approximately one third of \$1.2B annual research expenditure.

Key strategic objectives of DTV are to build, nurture and sustain an innovation culture to accelerate access to capital and increase investments in deep tech innovations in the region. This is accomplished by connecting our researchers with industry mentors, investors, partners, and networks using virtual tools and coordinated events. An important outcome of DTV is to develop engineers and scientists armed with the entrepreneurial networks and skills needed to further their commercialization efforts, ultimately contributing to the region's growth and societal impact. This venture development and building of entrepreneurial capacity is being accomplished with strong regional programming, global partnerships with hubs, extensive entrepreneurial support (available and integrated throughout the innovation hub), and close alliances with other centers of excellence which offer direct access to industry contacts through their joint partnerships.

#### Portfolio Management: Venture Creation in Support of University-Affiliated Startups

DTV follows a very thorough portfolio management process to identify ideal candidates from the earliest stages of innovation. With a scalable ENGAGE + LAUNCH + GROW programmatic approach, our team works with key stakeholders - faculty, researchers, postdocs, PhDs and undergraduate researchers - by stimulating and supporting the growth of Texas A&M Engineering technology startups through multiple complementary efforts. By engaging with faculty and researchers, the DTV team works directly with inventors on a daily basis through discussing idea generation, invention disclosure, managing the disclosing process with the IPM team as well as identifying market fit and enabling the technology to enter the venture creation pipeline process leading to new venture formation.

# DeepTech Ventures Life Cycle



Market **Identification** & Customer Discovery

Company Foundation LAUNCH



## **Objectives**

- Review of leads, assess and prioritize
- Opportunity Assessment
- Set up project
- · SBIR/STTR/Innovation services
- Execute Projects
- · Develop business strategy around core competency

#### **Key Programs**

- NSF I-Site and I-Corps
- Global initiatives · Aggies Invent
- · Professor of Practice Mentor Engagement
- SBIR/STTR Innovation Services
- Texas A&M New Ventures Competition
- Aggie Angel Network
- · Engineering Inc.
- · Statewide Incubation & Acceleration
- · Aggie Angel Network
- Nationwide network of VC and Angel Investors

While in the DTV pipeline, we provide comprehensive support from ideation to management of invention disclosures, IP portfolio analysis, licensing transactions, start-up formation with support in equity and term sheet negotiation, innovation ecosystem formation and management for large multidisciplinary grants. More than 85 start-ups have been formed based on TEES research innovations since the office's inception in 2014. These startups have gone on to raise significant external capital with compelling societal and financial impact through its product commercialization.

Community Engagement (Faculty, Alumni, Mentors, Funders): Innovation Ecosystem

DTV's mission is to build the external innovation ecosystem through community engagement and support the growth and sustainability of new ventures created through the DTV pipeline. With a statewide mandate to foster economic development through technology start-ups, DTV works with early-stage entrepreneurs to provide a platform for building the companies from seed funding to revenue stages. DTV, through its various innovation programs, brings in investors, entrepreneurs, executives and alumni to support the innovators. Below are some of the key programmatic initiatives of our innovation hub:

Light deneurship Ecosystem Innovation **Ecosystem** Paining and Education

The Texas A&M New Ventures Competition (TNVC), the flagship program of DTV, is open to all Texas-based ventures seeking to bring a new or enhanced technology to the marketplace. Participant companies must be technology or science-focused independent ventures in the pre-seed/seed, start-up or early growth stages. TNVC supports venture creation, small business

development, and the acceleration of emerging technology commercialization by providing connections and capital where they will have the highest impact. Over the last 8 years of competition, TNVC has coached and mentored more than 600 companies through this process. The success metrics far surpass the small business norm with 98% of competition Finalists still in business or successfully exited in eight years of competition. Additionally, competition Semifinalists have an 86% success rate after 8 years. These competing companies have also gone on to raise more than \$433M. This not only shows the competition has a due diligence selection process that is proven to identify the best of the best, but the coaching and mentoring given by seasoned subject matter experts (SME's) and entrepreneurs has provided significant benefit to these companies. National research institutions have also benefited from the success of this competition by receiving more than \$10M in sponsored research funding. Annual workshops, hosted by TNVC in cities around Texas, assist ecosystem partners with preparation for the competition along with generalized incubation assistance.

NSF I-Corps & I-Site: Texas A&M is a national leader and founding team member of the Southwest I-Corps node (2012). With 48 teams and \$2.4M in funding, this program has served to significantly increase the quality of start-ups emerging from our portfolio. Texas A&M Engineering manages an NSF I-Site program, established in 2017, training students and faculty teams in customer discovery and deep tech commercialization topics through the lens of entrepreneurship. Teams engaging in the I-Site program have received more than \$650,000 in funding. Funded by NSF, this \$500,000/5-year grant has allowed us to develop and sponsor 148 teams through completion of the I-Site program.

The Aggie Angel Network (AAN) is a valuable, long-term partner with DeepTech Ventures. AAN, composed of accredited investors, provides a showcasing platform for our promising early-stage technologies as well as significant opportunities for funding and mentor/management team identification from within their membership base. Additionally, AAN and TNVC have formalized a strategic partnership enabling AAN members to invest, mentor or participate in board or management positions of promising TNVC competitors. TNVC's in-depth, multi-tiered due diligence process provides AAN with prescreened investment opportunities. AAN has provided more than \$400.000 in funding to TNVC competitors over the past 4 years.

SBIR-STTR Support: DTV along with other Texas A&M University System units annually host an SBIR/STTR webinar series. This dynamic series has reached more than 250 researchers, graduate students, postdoctoral students and start-up venture attendees who hear from a wide range of SBIR/STTR experts and participate in sessions of Q&A. DTV personnel also provide review services for start-ups in our ecosystem applying for these programs.

Incubation and State-wide Incubator Relationships: DTV has close partnerships with many renowned incubators and accelerators regionally and nationally. This allows us to more broadly assist our start-ups that have the need for highly-specialized incubator and accelerator efforts. TMC Innovations is a prime example of this type of relationship and the benefit that can come to the acceleration of DTV startups needing specialized medical incubation. With close collaboration and proximity to the nation's largest medical center, TMC is just one example of our broad network of assistance.

Experienced Mentor Pool: Texas A&M Engineering has one of the nation's largest Professor of Practice Programs. Presently, this program has more than 90 highly experienced industry experts, averaging 15-30 years of experience in all areas of engineering R&D, product development and commercialization. Start-up founders also have access to an active Entrepreneur-in-Residence (EIR) program to support all early-stage ventures. EIRs and Mentor In Residence (MIR) also play a critical role in serving early stage start-ups and bring their contacts in the key industry verticals along with serving as industry mentors in NSF I-Corps programs.

Campus-wide partners: DTV works very closely with other partners across Texas A&M University. Texas A&M Engineering Entrepreneurship programs Aggies Invent, C3 Certificate, and Engineering Inc. support student innovators to take ideas from concept to prototype with incubation support. Additional resources include the McFerrin Center for Entrepreneurship that runs multiple student

focused programs like 3-Day Start-up, Aggie Pitch, Start-up 101, and Aggies-in-Business.



#### R&D and Innovation focused Global Programs: Belgium, France, Qatar, Greece

DTV and Texas A&M Engineering have been a primary leader in fostering many global partnerships. One notable relationship is with the Wallonia Region of Belgium, which began in 2005 and quickly blossomed into a formal, written agreement including annual reciprocating visits between the regions promoting startup innovation, sponsored research and cross

collaboration. This effort has enabled visits by more than **300 Belgian start-ups and larger corporations**. Additionally, this led to more than **65 companies** to open divisions in the Brazos Valley region and/or establish research agreements with Texas A&M. This partnership conversely enabled our DTV Engineering start-ups, among others, to pursue activities in Belgium by not only establishing offices in their region, but by fostering research relationships as well. **Hundreds of millions of dollars of commerce and sponsored research have grown out of this formal relationship.** Over the last 5 years, new programs that focus on deeptech entrepreneurship training, company visits and new venture co-creation have been developed with universities at Texas A&M Qatar, Aristotle University of Thessaloniki in Greece and École Nationale Supérieure d'Arts et Métiers (ENSAM) in France. Through these universities we are able to engage with their broader ecosystem in the MENA region, Europe and other global ecosystems to open up opportunities to fundraise while also expanding to new markets.

# Addressing Cultivation of Startup Founders who Identify as a Member of a Traditionally Underrepresented population; Diversity and Inclusion (D&I) in Venture Creation



DTV serves the entire community across the Texas A&M Engineering family and honors diverse experiences and perspectives, striving to create welcoming and respectful learning environments by promoting access and opportunity in the following areas:

**Diversity**: DTV is able to recognize, promote and learn from entrepreneurial experiences from students and faculty and share them to showcase success stories with a goal of increasing participation from diverse groups who typically are underrepresented in technology transfer and as start-up founders emerging from university research programs.

Inclusion: Create an awareness and a culture that is respectful and ensure all individuals feel they belong. One of the programs that reflects the D&I efforts is The National Science Foundation's (NSF) I-Corps Site (TAMU Site). Program teams represent a diverse demographic population. Women make up 27% of the teams and 23% have been Black, Hispanic, or International. The team composition is 100% student. The DTV team continually strives to support all innovators to succeed in venture creation.

#### Outcomes Achieved in Venture Creation; (Competitions, Incubators, Accelerators)

DTV has been successful in establishing a legacy of fostering "research inspired entrepreneurship" by bringing researchers and innovators within academia to educate and partner with the investment and entrepreneurial communities and address the toughest challenge of deep tech venture creation: crossing the valley of death. **75% of our startup portfolio companies** have been formed since the formal launch of DTV. This increase is expected to more than double within the next 3 years. As the accompanying figure shows, DTV's impact touches the entire life cycle of value creation by starting at the earliest stages of idea development, where education and mentoring is the most valuable support, and then expanding the support system through venture creation into post venture support, via programs such as the Texas A&M New Ventures Competition. Our team at DTV is deeply dedicated to continuing this work and growing the innovation ecosystem so that the investments in deep tech R&D can be commercialized successfully.

# **DeepTech Ventures Ecosystem Impacts**









DeepTech Webinar Series attendees ove 21 countries

Venture Pipeline

Pipeline
Formation+Incubation 114 start-ups

12 Commercialization





Funding raised by ventures

Engineering: Researchers 20,000+ students

Texas A&M New Ventures Competition Venture Growth

Companies have raised over \$433M

\$2.8M

competition

\$132M

companies\*

98%

98% of finalists still in business or successfully exited

\*calculated using the Global Innovation Policy Center's data

#### Profile of a DTV Alumni

ALLVAR was founded in 2014 and emerged from Materials Science research at Texas A&M. They have received equity investment from Texas A&M Engineering Experiment Station (TEES) and have garnered \$3.65M in a combination of dilutive and non-dilutive funding since their inception. This startup, utilizing licensed technology from research developed during the CEO's PhD program, manufactures revolutionary metal alloys, whose unique negative thermal expansion helps compensate and eliminate the detrimental effects thermal expansion has in a variety of applications. Negative thermal expansion alloys can be used to athermalize optic designs, reduce thermal stress in assemblies, maintain a constant force



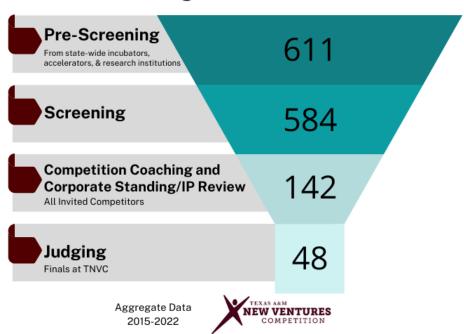
load, and maintain thermal stability. ALLVAR is continuously grateful for the support received from TEES and DTV, along with the National NSF I-Corps program, NASA, Air Force, and Missile Defense Agency (MDA) who are helping bring this brand new technology to the scientists and engineers that need it. <a href="https://allvaralloys.com/">https://allvaralloys.com/</a>

# **Appendix A - Texas A&M New Ventures Competition**

TNVC's proven due diligence process, demonstrated above, is a meticulous selection process including referrals from some of the best entrepreneurial support organizations in the state, a rigorous application process, screening by subject matter, industry and IP experts as well as seasoned entrepreneurs.

- Pre-Screening: Audit all applications for minimum requirements
- Screening: Subject Matter Experts (SME), IP, Industry, Business Expert evaluations; 5 screeners per application
- Coaching: All invited companies are required to have a minimum of one 30-minute coaching call. Coaches are entrepreneurs and SMEs from the private sector including former competitors.
- Corporate Standing/IP Review: All companies must be in good business standing, in Texas. Commercialization Fellows research and compile extensive IP reviews for each company. IP reviews are shared with IP attorneys selected for judging positions. Companies compete in rounds of industry specific flights to determine the 6 annual finalists.

# Texas A&M New Ventures Competition Due Diligence Process



## **TNVC Impact: 2015-2021**

All semi-finalists & finalists are tracked in an investment portfolio fashion, conducting annual surveys and monitoring for funding events using tools such as Crunchbase.

In eight years of competition, TNVC:

- Has awarded \$2.8M in prizes; More than 50% of prizes in non-dilutive funding
- Companies have raised over \$433M since inception
- 86% of our semi-finalists and 98% of our finalists are still in business now that we are entering 9th year (Significant compared to common stat of 20% at 3 years)

## **TNVC Impact Testimonials:**

The TNVC is a first-class event that really showcases how much Texas has to offer. Winning the 2019 event greatly helped our fundraising and accelerated our time to market. ~Daniel Powell, CEO Spark Biomedical

TNVC is an exceptional platform for start-ups to get broad exposure and acquire critical connections for growth.

Participation in TNVC boosted our growth and operation by an order of magnitude. ~Hadi Ghasemi, PhD, CTO SurfEllent

TNVC is an incredible organization and competition for early-stage companies. Koda Health truly benefited from the exposure they provided and the network they introduced us to. ~Desh Mohan, CEO Koda Health

It was a couple years ago we won our first TNVC award and it's shocking to think how far we've come since then – and so much further to go. TNVC was one of the earliest supporters of our company and we will be forever grateful to them for that. The startup world is filled with failed attempts so these key early supporters and their vision and foresight has meant the world to us. ~Geoff Lucks, Co-Founder and COO Venostent

TNVC is one of the best business competitions we have participated in. The competition is strong and the reward is significant. The reward from TNVC significantly helped us move our company forward during a critical time in development. ~Jessica Traver-Ingram, CEO IntuiTap Medical

TNVC 2020 proved to be a true pivot in execution in a virtual environment to stay in step with the changing business environments all young startups are facing during the COVID-19 pandemic. ~Caleb Holt, CEO Axle-Box

TNVC was an amazing experience. We were impressed by the amount of support and networking the competition offered during the COVID pandemic. We're thankful to be selected for the Paragon Innovation Award along with the elevator pitch award, which will be used to help grow our business. ~Roman Sandoval, CEO Allosense, Inc.

The TNVC provides a superb platform for Texas start-ups to both test and advance their chances of success. SLW has been truly privileged to contribute to the competition's mission through sponsorship, mentoring, and judging. We have been consistently impressed by the quality of the contestants and gratified that our IP legal services prize is making a difference to its recipients in a crucial stage of their development as a company. ~Sabine Ward, J.D. Patent Attorney, Schwegman Lundberg & Woessner, P.A.

The Aggie Angel Network (AAN) has partnered with TNVC since inception because our members recognize the incredible opportunity it affords to engage with the most innovative startups across the state. Through our investment prize alone, AAN Members have invested nearly \$300,000 into innovative new companies across a wide range of industries, and the competition opens our doors to dozens of entrepreneurs and their technologies. TNVC is a highlight for AAN and we are proud to remain prize sponsors and excited to participate in the competition each year. ~Blake Petty, Executive Director, Aggie Angel Network

## **Notable TNVC Press Releases of TNVC Participants:**

#### Allotrope Medical Announces FDA Clearance of StimSite™



"Whether it is a gynecologic or colorectal operation, a significant portion of OR time is spent looking for the Ureter and keeping it safe. StimSite provides surgeons with an elegant tool to help rapidly identify the ureter, keep it safe from





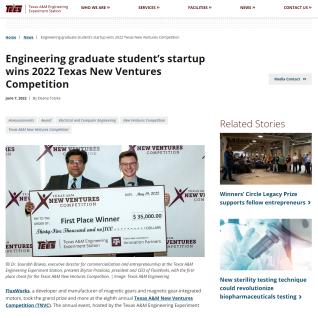
TODAY ON THE SHOW SHOP HEALTH PARENTS FOOD POP CULTURE LIFE



Q

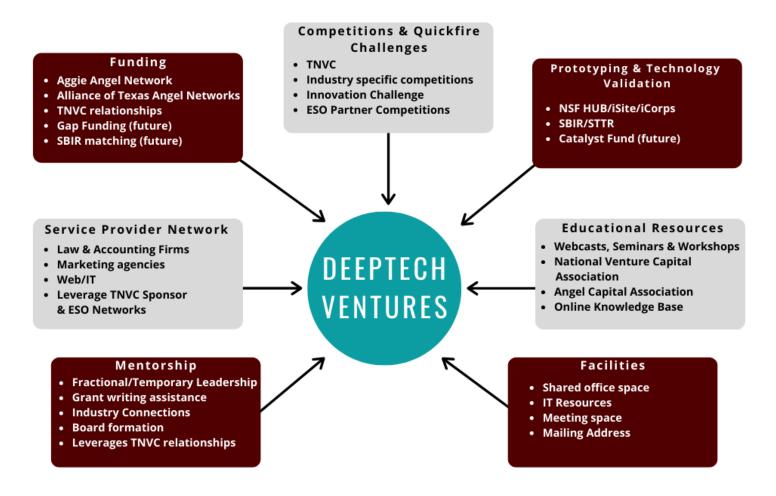






# **Appendix B**

### **DeepTech Ventures: Key Activities**



#### **Notable Press Releases of DeepTech Ventures Portfolio Companies:**



ESG

COVID-19

9 SERVICES >

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SIGN

REGISTER

#### Strateos combines Transcriptic and 3Scan to become Premier Drug Discovery Technology Partner for the Pharmaceutical Industry

Industry Leader Mark Fischer-Colbrie appointed as Chief Executive Officer

June 03, 2019 13:44 ET | Source: Strateos

f SAN FRANCISCO, June 03, 2019 (GLOBE NEWSWIRE) -- The boards of Transcriptic and 3Scan

have unanimously approved an agreement to merge companies to combine their considerable engineering capabilities in developing automated systems for chemistry, biology, and tissue analysis. The resulting new company is Strateos<sup>TM</sup>.

# Fujifilm completes acquisition of Kalon Biotherapeutics

2014-12-18

#### FUJIFILM COMPLETES ACQUISITION OF KALON BIOTHERAPEUTICS

Morrisville, North Carolina and College Station, Texas – December 18, 2014. FUJIFILM Diosynth Biotechnologies U.S.A. Inc. (FDBU), a FUJIFILM Corporation subsidiary, today announced the completion of its acquisition of Kalon Biotherapeutics LLC, marking an important new chapter in the emergence of the Texas biosciences industry as a center for world-class development and manufacturing of life-saving biopharmaceuticals and biotechnology while providing



#### Industrial AI Company, Veros Systems, Closes Series C Funding

NEWS PROVIDED BY

Veros Systems →

Jun 11, 2020, 0836 ET

AUSTIN, Texas, June 11, 2020 /PRNewswire/ -- Veros Systems ("Veros"), a leading industrial artificial intelligence company today announced the close of a \$2.2M Series C financing. Shell Ventures led the round that included existing venture capital investor, austin Ventures, Chevron Technology Ventures, and LiveCak Venture Partners.

Veros uses electrical data, alone, to monitor the health and performance of industrial machinery



Armony Aeronautics has won a contract from the Air Force's Agility Prime Program to further develop and commercialize their quiet rotor technology. | Image: Texas A&M Fnainperina

Harmony Aeronautics, a company started by members of the Texas A&M University Department of Aerospace Engineering, has recently won a Small Business Technology Transfer (STTR) contract from the Air Force's <u>Agility Prime</u> program to further develop and commercialize their quiet rotor technology for vertical flight capable Urban Air Mobility aircraft. The contract is worth \$150,000 and enables the company to seek up to \$2.3 million in total funding over the next three years.



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#### Shape Memory Medical Celebrates Treatment of 1,500<sup>th</sup> Patient

August 03, 2022 08:00 AM Eastern Daylight Time

SANTA CLARA, Calif.—(BUSINESS WIRE)—Shape Memory Medical Inc., developer of shape memory polymer devices for peripheral and neurovascular markets, announced today that its 1,500th patient has been treated, marking a significant milestone for the Company's portfolio of shape memory polymer embolotherapy devices — The IMPEDE® Embolization Plug Family and the Trellix® Embolic Coil. The patient was treated by Thomas Maldonado, MD, Professor of Surgery, NYU Grossman School of Medicine and Director, of the Aortic Center at NYU Langone Health.

"This accomplishment is only the beginning of our plans for this emerging technology,..."

Tweet this

"We were excited to perform our first case using shape memory polymer technology, and in this particular case for the occlusion of the internal iliac aftery for prevention of post-EVAR Type II endoleak," said Dr.

Shape memory polymer is a new concept in medical devices, built on 25 years of polymer research and expertise initiated at Lawrence Livermore National Laboratory (LLNL) and further developed at Texas A&M

University. Shape memory polymer features a porous, compliant polyurethane embolic material that enables conversion to organized thrombus followed by gradual healthy tissue formation. In 2009, Shape Memory Medical was formed to develop and commercialize devices for use in the peripheral and neurovascular embolization markets. An emerging alternative to traditional, bare metal embolization devices, shape memory polymer is soft and conformable, and the material is radiolucent which improves visibility of the surrounding anatomy during and after the procedure.

# **Appendix C - Global Programs**

#### **Texas A&M Engineering - Qatar**



Join Dr. Saurabh Biswas, from Texas A&M Engineering, to explore the ins and outs of building a tech start-up based on a university innovation tomorrow, 4-5 p.m., as part of Qatar Entrepreneurship Week (hosted by Qatar Development Bank). For info and to register: tx.ag/RowadQatar



Faculty and staff from Texas A&M University at Qatar and Texas A&M University will be hosting workshops on sustainable industrial design, technical standards for entrepreneurs, product design, and more, in the upcoming Qatar Entrepreneurship Conference (Rowad) from 15 to 19 Nov. 2020 as part of Global Entrepreneurship Week.

Rowad Qatar, an annual initiative of Qatar Development Bank, focuses on entrepreneurship activities and achievements that take place locally and internationally. The conference acts as a platform for entrepreneurs and small and medium-sized enterprises (SMEs) to enhance their skills and knowledge while further fostering this ecosystem in Qatar.

The workshop, led by Dr. Saurabh Biswas, Executive Director of Commercialization and Entrepreneurship at Texas A&M University's College of Engineering, will discuss important aspects of creating a technology focused start-up and will cover issues like IP, regulatory matters, and other business considerations.

#### **Aristotle University of Thessaloniki - Research Internship**

The Aristotle University of Thessaloniki Research Internship Program was designed to give students the opportunity to participate in research while experiencing another culture. Students are able to work closely with faculty members who are conducting research in a particular area of interest. Engaging in this program is instrumental to the process of venture creation for both faculty and students.



# École Nationale Supérieure D'arts Et Métiers - Research Internship



This international internship opportunity is funded by the <a href="IRES NSF">IRES NSF</a>
<a href="Program">Program</a>, which contributes to addressing the knowledge gaps of the entering industrial workforce by imparting world-class research skills in smart manufacturing and artificial intelligence (AI) to diverse groups of U.S. engineering students through international cohort experiences. It aims to provide students with hands-on skills in state-of-the-art industry-scale machines and platforms. The project will also broaden professional networks, deepen the relationships of a diverse student cohort with the industry and introduce students to international practices in innovation and technology development.