

Arun Vaithianathan

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EDUCATION

Texas A&M University

August 2024 – Present

Bachelor of Science in Chemical Engineering, Minor in Mathematics

College Station, TX

- Cumulative GPA: 3.918
- Craig and Galen Brown Engineering Honors | Aggies in Tech Business Technology Certificate Program

EXPERIENCE

Undergraduate Researcher

February 2026 – Present

Texas A&M University College of Engineering

College Station, TX

- Investigating catalytic conversion of petroleum coke into battery-grade graphite for sustainable, low-cost anode materials
- Executing material synthesis via high-energy ball milling and iron catalyst integration, operating high-temperature tube furnaces to drive graphitization
- Characterizing synthesized samples utilizing X-ray Diffraction (XRD) to evaluate structure and validate graphitization degree

Control Systems Engineering Lead

May 2025 – Present

Texas A&M University, Oceanus ThinkTank, MATE ROV

College Station, TX

- Engineered a closed-loop feedback control system (PID) utilizing Python and ArduSub firmware to maintain vehicle stability under dynamic fluid conditions
- Designed a Distributed Control System (DCS) architecture by integrating a Raspberry Pi 5 and Blue Robotics Navigator flight controller to manage 6-DOF IMU data and thruster output
- Conducted a techno-economic trade study on single-board computers (SBCs), selecting a high-bandwidth architecture to support photogrammetry and turbidity sensing requirements
- Developed a real-time computer vision tool that ingests a live underwater RTSP feed over Ethernet, using variance-based frame-acquisition logic and Apple's RealityKit to generate high-fidelity 3D reconstructions

Aggies Invent: ExxonMobil Engineered for Safety Team Lead

November 2025

Texas A&M University, Meloy Program

College Station, TX

- Awarded 3rd Place Overall for designing a SIL-rated safety interlock system utilizing Two-out-of-Two logic and ISO 13849-1 standards to prevent struck-by incidents in high-risk zones
- Engineered a hardware-agnostic E-stop integration utilizing SAE J1939 protocols, triggering automatic shutdowns via Edge AI and UWB proximity sensors upon detecting dynamic buffer zone breaches
- Designed a scalable deployment strategy distinguishing between Upstream (mobile magnet-mount) and Downstream (fixed network) infrastructures, specifically addressing HazLoc (Hazardous Location) constraints

Texas Exchange for Energy & Climate Entrepreneurship Fellow

May 2025 – May 2026

Greentown Labs

Houston, TX

- Conducted assessments of early-stage technologies in carbon capture, hydrogen production, and low-carbon fuels, evaluating process scalability for industrial application
- Analyzed technical pathways for pilot-scale validation, mapping research capabilities to industry needs for 3+ potential joint ventures
- Facilitated technical knowledge transfer between academic research groups and industrial startups to accelerate the commercialization of energy transition technologies

LEADERSHIP & EXTRACURRICULAR

AIChE Outreach & Publicity Committee Member

August 2025 – Present

Texas A&M University, AIChE

Houston, TX

- Coordinated digital initiatives to increase student engagement with chemical engineering technical content and professional development opportunities

SKILLS

Process Simulation, Controls, & Safety: Aspen HYSYS (Steady-State Modeling, Reactive Recycle Loops, Flash Separators), LOPA, HAZOP, SIL Assessment, PID Loop Tuning, DCS Architecture, SAE J1939 Protocols

Software & Tools: Python (OpenCV, NumPy, Pandas), Linux/Unix, Git, Autodesk Fusion 360, Office Suite, VBA