Tianyu Wang

Dalian, Liaoning | Houston, TX | (+86) 13969805077 | twang@53CougarNet.UH.EDU | GitHub (TVC System) |

SUMMARY

Junior Mechanical Engineering student with firsthand experience in **high-fidelity GNC simulation** and **precision micro-fabrication**. Developed a **2D TVC system** in Simulink with **0.8s** disturbance rejection and optimized **integrated microfluidic platform** using COMSOL. Proficient in **PID control** and **multiphysics modeling**, seeking to apply robust control theory to large-scale aerospace systems like **Starship**.

EDUCATION

University of Houston (UH) & **Dalian Maritime University (DMU)** Expected Sep 2027

- *Bachelor of Science, Mechanical Engineering (**Dual Degree Program & In English**)*
- *GPA:* **4.0/4.0 (UH) & 4.34/5.0 (DMU)**
- *Relevant Coursework:*
  - Calculus
  - Thermodynamics
  - Statics
  - Dynamics
  - Engineering Mathematics
  - PDE & ODE
  - Solid Mechanics
  - Dynamics Systems & Control
- *Awards & Achievements:*
  - IELS: 6.5
  - Second Prize, Liaoning Provincial Mechanics of Materials Competition (Provincial Level) (2024-2025)
  - DMU Excellent Student Scholarship (2024-2025)
  - DMU Scholarship for Excellence in Extracurricular Competitions (2024-2025)
  - **China Xiaomi Scholarship** (2023-2024)
  - Third Prize, National English Competition for College Students (National Level) (2023-2024)
  - Third Prize, Liaoning Provincial Theoretical Mechanics Competition (Provincial Level) (2023-2024)

TECHNICAL SKILLS

- *Computer Languages:*
  - Python
  - **MATLAB & Simulink**
- *Tools:*
  - Modeling & Simulation:
    - **COMSOL**, Ansys Fluent, OpenRocket, **Design-Expert**, **Origin**
  - Design & Manufacturing:
    - **AutoCAD**, Creo Parameters, SolidWorks
  - Productivity:
    - Word, Excel, PowerPoint

PROJECTS & LEADERSHIP EXPERIENCE

2D Rocket TVC System Simulation (MATLAB/Simulink) Nov 2025 – Present
Independent Project

- **Developed** a high-fidelity TVC simulation incorporating **variable mass** dynamics; tuned the control law to counteract lateral wind forces with a **0.8s recovery latency**, ensuring stability throughout the full propellant burn.
- **Currently iterating** the architecture to incorporate **actuator dynamics** and **Kalman filtering** while transitioning from PID to **LQR/MPC** for optimized trajectory tracking in high-noise environments.

Portable Microfluidic Platform for Rapid Antibiotic Susceptibility Testing Mar 2024 - Present
Research Assistant | Microfluidics Lab, DMU | Advisor: Prof. Yuezhu Wang

- **Engineered** a **novel Circular Interdigital Electrode** architecture to maximize bacterial adhesion surface area, significantly improving signal sensitivity for electrochemical impedance sensing compared to rectangular designs.
- **Developed** a high-fidelity **COMSOL Multiphysics** model to simulate full-channel fluid dynamics, optimizing serpentine mixer geometry (**R_{in}=400μm**) to enhance **Dean vortex** induction.
- **Prototyping** a portable ***in-situ*** sensing device for Marine Ranching to detect pathogen outbreaks; establishing a data-driven framework to monitor E. coli resistance thresholds and provide **optimized antibiotic dosing** recommendations to ensure aquaculture health.