Kun Qiu
(347) 681-9212 | kun.qiu@vanderbilt.edu | www.linkedin.com/in/kqiu1317

EDUCATION

Vanderbilt University, School of Engineering   **August 2021 - Present**
Accelerated Master of Engineering in Mechanical Engineering | GPA: 4.0/4.0
Bachelor of Engineering in Mechanical Engineering
Major: Mechanical Engineering | **GPA:** 3.87/4.0
Minor: Computer Science

SKILLS

Programming Languages: Python (Advanced) | C ++ (Intermediate) | MATLAB (Intermediate)
Framework & Libraries: OpenCV | SciPy | PyTorch
Design Tool: SolidWorks | COMSOL | Arduino | Finite Element Analysis (FEA) | Git

EXPERIENCES

Combustion and Laser Diagnostics Lab, Nashville, Tennessee   **January 2023 – Present**
Research Assistant for Molecular Tagging Velocimetry (MTV)
1. **Stereoscopic MTV for High-Speed Flow | Github:** https://github.com/Kun-Qiu/Stereoscopic_MTV
   - *Developed* and *implemented* an in-situ calibration setup for MTV to determine 3D velocity fields from two sets of 2D velocity fields.
   - Utilizing high order 3D transformation polynomial to reconstruct 3D velocity field with the relative displacement error bounded by *5% of true velocity.*
2. **2D Velocity Estimation | Github:** https://github.com/Kun-Qiu/MTV_2D
   - *Developed* a 2D grid detection method with *Hough Transformation* and *corner detection* method, achieving *rotational* and *scale invariance* for extractions of 2D velocity field.

Dong's Miniature Robotics Lab   **September 2022 – January 2023**
Lab Assistant
Automatic Adhesion Force using Computer Vision | Github: https://github.com/Kun-Qiu/Adhesion-Detection
   - *Designed* and *automated micro-scale adhesion force measurements* using a modified cantilever beam and computer vision techniques.
   - Improved detection accuracy through *Contour Detection* and *Hough Transformation* algorithms, streamlining data acquisition processes.

PROJECTS

Nissan Automatic Cruise Control Module Installation Senior Design Project   **Aug 2024 – Present**
   - Designed an *automated robotic system* for assembly processes using *Universal Robotics UR10e*, achieving precise ICCM placement with torque-controlled fastening.
   - Reduced prototyping time by *92%* (24 hrs → 2 hrs) through modular subassembly design and sensor integration for error detection.
   - Enhanced system reliability while adhering to industrial safety standards (*ISO 10218-1, ISO/TS 15066*).

Multiphysics Simulation of Transient Cooling of a Soda Can via Convection   **Mar 2024 – May 2024**
   - *Developed* and *implemented* a heat transfer mathematical model for analyzing cooling dynamics under forced convection using MatLAB | Github: https://github.com/Kun-Qiu/Heat_Transfer_Soda_Can
   - *Simulated* the fluid flow dynamics and the *convective heat transfer* from the thermoelectric device to the soda can, analyzing the impact of flow on *overall cooling efficiency*.

Wheelchair Lift Design | Github: https://github.com/Kun-Qiu/Wheel_Chair_Elevator   **Mar 2023 – May 2023**
   - Designed a *scissor-lift system* supporting *up to 100 kg*, achieving safe horizontal elevation for wheelchair users to *one meter* with *minimal tangential acceleration*.
   - *Optimized* mechanical design for *compactness* and *stability* under dynamic loads.