Nannan Gu

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EDUCATION

University of California, Santa Barbara **Santa Barbara, California**

Bachelor of Science (B.S.) in Mechanical Engineering *September 2021 - September 2025*

- **GPA:** 3.66/4.00
- **Relevant Coursework**:Statics, Dynamics, Strength of Materials, Engineering Mathematics, Mechatronics, Control Systems, Finite Element Analysis, Thermodynamics I & II, Fluid Mechanics, Vibrations, Mechanical Engineering Design I–III, Robotics (Control and Planning), CAD/CAM, Mechanisms, Machine Learning, Structures, Engineering Lab, Materials Science

SKILLS

Technical skills:

- CAD (SolidWorks, Fusion 360, AutoCAD), CAD/CAM, 3D Printing, CNC Machining, Prototyping and Manufacturing, Rapid Prototyping, Embedded Systems (Arduino, Raspberry Pi), Sensor Integration, Stepper Motor Control, MATLAB, Simulink, Python, LabVIEW, Git/GitHub, Control System Analysis, Robotics (Planning and Control), Mechanism Design, Finite Element Analysis (FEA), Structural Analysis, Failure Mode Analysis, Fluid Dynamics, Thermodynamics, Electronic Design Automation (KiCad), PCB Design, System Integration, Testing and Validation, Data Analysis, Technical Documentation

General skills:

- Project Management, Leadership, Teamwork, Communication, Problem-solving, Critical Thinking, Attention to Detail, Creativity, Time Management, Adaptability, Technical Writing, Self-directed Learning, Cross-functional Collaboration, Presentation Skills

PROJECT EXPERIENCE

CNC Wind Tunnel Testing System **Santa Barbara, California**

Independent Project *June 2025 - Present*

- Designed and fabricated a CNC-controlled platform for aerodynamic testing in a wind tunnel, enabling automated linear translation of test objects under airflow
- Built a lightweight, rigid frame to reduce structural load
- Integrated stepper motor-driven actuation and developed a custom control interface for real-time adjustment and repeatable motion sequences
- Engineered for aerodynamic compatibility, vibration resistance, and seamless integration with existing tunnel infrastructure

Oceallus **Santa Barbara, California**

Leading Member *September 2024 - June 2025*

https://github.com/Oceallus/underwater_spy_camera

- Spearheaded the design of a low-cost, modular underwater camera system for marine research at depths up to 30 meters, enabling four-week autonomous deployments
- Developed a power-efficient imaging system with Raspberry Pi Zero, infrared LEDs, and photoresistor-based control logic to minimize energy usage
- Designed and tested a stable, adjustable tripod frame using PVC and custom 3D-printed ABS joints, with modular ballast and camera/light arm configurations for uneven seafloor conditions
- Conducted full system integration and testing in both controlled and open-water environments, validating image quality, lighting performance, and structural resilience
- Managed technical documentation, testing protocols, and reproducibility goals to ensure the system can be built by non-engineering research groups using off-the-shelf and 3D-printed parts

FlexBin **Santa Barbara, California**

Leader *April 2024 - June 2024*

- Led the design and prototyping of a smart trash can system to detect and address overflow conditions using sensors and electromechanical actuation
- Engineered a dual-wall compression mechanism using a stepper motor and control circuitry to reduce friction and simplify bag removal
- Integrated load cells for dynamic weight sensing, an IR remote for user input, and an LED feedback system to enhance usability
- Managed project milestones, delegated subsystem tasks, and ensured timely delivery of a fully functional prototype in a 10-week design cycle

VibraWake **Santa Barbara, California**

Independent Project *April 2022 - June 2022*

- Developed a vibration-based alarm pillow as a quiet alternative to sound-based alarms, targeting users with different sensory needs
- Designed a compact embedded control system with adjustable vibration intensity, powered by an Arduino microcontroller
- Fabricated a working prototype with internal cushioning, motor dampening, and user-friendly adjustability settings
- Conducted functional testing and user trials to ensure wake-up effectiveness and comfort across varying sleep environments

AWARDS

William R. Hearst Scholarship **UCSB**, *2024-2025*

Lawrence & Nancy Perillo Scholarship **UCSB**, *2022-2023*

Dean's Honors (6 quarters) **UCSB**, *2021-2025*