Kevin Chen

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EDUCATION

Northwestern University | Evanston, IL September 2020 - June 2024

BS: Mechanical Engineering, Minor in Data Science and Environmental Policy

- GPA: 3.81 / 4.00
- Relevant Coursework: Static & Dynamic Systems, Fluid Mechanics, Thermodynamics, Design & Manufacturing, Material Mechanics, Electronics Design, Heat Transfer, Propulsion Systems, Control Systems, Differential Equations, Multivariable Calculus, Linear Algebra, Machine Design and Dynamics, Stress Analysis, Mechanical Vibrations, Data Visualization

TECHNICAL SKILLS

- Programming (MATLAB, Python, CSS, HTML) | CAD & FEA (SOLIDWORKS, NX, Creo, Abaqus, Ansys, Femap/Nastran)
- Oscilloscopes and breadboarding (nScope) | Confocal, SEM, and high-speed imaging (ImageJ, Phantom Camera Control)
- Mill and lathe (Conventional & CNC Machining) | Manufacturing (Additive, Forging, Casting, Forming, Injection Molding)

EXPERIENCE

Sierra Space Manufacturing & Stress Analysis | Denver, CO June 2023 - September 2023

Technical Intern

- Conducting sine-vibration analysis through Femap & NX Nastran of the Dreamchaser and Cargo Module during ascent to validate component integrity and envelope support-structure interactions
- Proposed and tested new operable thermal margins for external cargo interface in conjunction with NASA ISS mating team
- Conducted purging operations for Dreamchaser bipropellant peroxide and kerosene tanks as well as non-destructive proof and leak testing before orbital weld installation and X-ray inspection

NASA Langley Research Center Structural Dynamics & Testing | Hampton, VA June 2022 - September 2022

Structural Dynamics Intern

- Conducted flexural testing of Advanced Composite Solar Sail System (ACS3) composite booms and cube-sat assembly to insure stability of flight article for March launch on a Rocket Lab Electron vehicle
- Designed crushable hybrid composite-polymer energy absorbers in Creo Parametric and used additive manufacturing techniques to improve occupant safety by 23% during crashes within an experimental VTOL aircraft
- Diagnosed and repaired material extrusion, PBF, and SLA 3D printers (Prusa, FormLabs, Raise3D, Ultimaker, Zortrax) in rapid prototyping lab to support ACS3 evaluation and Mars Sample Return gantry testing

Northwestern University Bazant Materials Science Laboratory | Evanston, IL May 2021 - June 2022

Undergraduate Researcher

- Performed fracture analysis on composites, shale, and concrete to determine material properties for manufacturers
- Developed biaxial tension-compression model through SOLIDWORKS and stress analysis with Abaqus FEA
- Gained conventional & CNC machining certification using mill, lathe, drop saw, diamond-edged band saw, waterjet, etc.

NUSolar & Northwestern Formula Racing | Evanston, IL September 2020 - June 2022

Chassis Team Member

- Assisted manufacturing of Solar Car 7 and contributed to development of Solar Car 8 floorboard through Siemens NX modeling and Abaqus FEA as an independent project with NUSolar leadership
- Specialized in composite layups, waterjet cutting, and laser cutting for current Formula vehicle pedalbox

LEADERSHIP

VEX Robotics Team, 7701X | *Design and Build Lead* August 2017 - May 2020

- 2019 & 2020 World Championship Divisional 1st place and finalists, 2019 1st place World Driver Skills Ranking, VEX Robotics 2020 National Signature Event Tournament Champion, 8x Regional Tournament Champions
- Constructed mechanisms (ratcheting rack & pinion launcher, differential 1:3 drivetrain), improved sensor suite (ultrasonic, IMU, shaft-encoder), 3D-printed custom gears and joints for lift and drive system, and upgraded pneumatics systems
- Applied PID controllers as well as odometry for autonomous motion and position tracking of robot, enabling a nearly flawless in-game autonomous route and lead 7701X to become the highest scoring team in the world during 2020

PROJECTS

L1 High Powered Rocketry Certification | *National Association of Rocketry & NUStars* December 2022 - February 2023

- Assembled LOC Precision PK-56 model rocket (F20-4W motor) to gain L1 HPR certification during 2023 winter quarter
- Proposing early stage hybrid propellent rocket engine P&ID and constructing preliminary test stands

Anvil Arrow RC Plane Replica | *Personal Project* Februrary 2023 - Present

- Modeled and drafted original RC model of Star Citizen's Anvil Arrow in Siemens NX and performed stress analysis to identify potential failure modes using classical and computational methods through Ansys
- Designed fully autonomous flight system with waypoint following capabilities utilizing GPS for location data, an IMU for relative motion and orientation, servos to power control surfaces, and a brushless DC motor for propulsion
- Adapting control algorithms like LQR for stable flight and odometry for position referencing between GPS updates