

# Danny Tran

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## Career Objective

New grad seeking engineering position to apply my technical skills for developing a career adept in aerodynamics, propulsion, composites, additive manufacturing, and design optimization in the aerospace industry.

## Education

**BS in Aerospace Engineering, GPA: 3.1**

University of California, San Diego (UCSD)

*Expected Graduation: June 2020*

## Technical Skills

- |                          |                       |                  |                   |                        |
|--------------------------|-----------------------|------------------|-------------------|------------------------|
| • CATIA V5               | • Creo/ProE           | • SolidWorks     | • AutoCAD         | • ANSYS                |
| • MATLAB                 | • C++                 | • Python         | • Hypermesh (WIP) | • Nastran/Patran (WIP) |
| • GD&T ASME Y14.5        | • Blue Light Scanning | • Laser Tracking | • ATOS Pro        | • Verisurf             |
| • Additive Manufacturing | • Metal Lathe         | • Vertical Mill  | • Wind Tunnel     | • OpenMDAO             |

## Professional Experience

**Large-Scale Design Optimization (LSDO) Laboratory - Dr. John T. Hwang Lab** || La Jolla, CA

*Oct 2019 - Present*

*Multidisciplinary Design Optimization (MDO) Research Assistant*

- Developing wing internal structure models in Python for an Electric Vertical Take-Off and Landing (eVTOL) Urban Air Mobility (UAM) vehicle facilitated by using NASA's OpenMDAO framework for design optimization
- Implementing Finite Element Method (FEM) into structures models to analyze aeroelasticity of beams

**General Atomics - Aeronautical Systems Inc. (GA-ASI)** || Poway, CA

*June 2019 - Aug 2019*

*Composite Tooling Intern*

- Fabricated a mockup carbon fiber with nomex honeycomb core bulkhead for MQ-9 Reaper (Predator B) for a fit check inspection inside its fuselage
- Repaired leak in landing gear joggle layup mold for Predator B fuselage using a carbon fiber wet layup patch and structural adhesive paste
- Laminated and vacuum bagged 5 tools (prepreg: 4 carbon fiber & 1 fiberglass) for oven and autoclave cures
- Assembled skins, ribs, conduits, and spars for a Predator B wing using adhesives and composite wet layups
- Inspected and repaired 7 wing rib trim and drill assembly fixtures to ensure dimensional and contour integrity via model-based inspection using a laser tracker with Verisurf for QA per engineering drawing
- Laid out hole and trim profiles from CAD models onto 6 wing ribs meeting specified GD&T (ASME Y14.5) via blue light scanning with ATOS Professional

**Additive Rocket Corporation (ARC)** || La Jolla, CA

*Oct 2018 - June 2019*

*Mechanical Engineering Intern*

- Performed and troubleshot Design of Experiments (DOE) of static structural and thermal simulations in ANSYS to gather data for a machine learning design optimization algorithm for rocket engines
- Designed parametric model of turbopump casing and impeller in SolidWorks for additive manufacturing in inconel 718 using Direct Metal Laser Sintering (DMLS)

**DroneLab - Qualcomm Institute - Dr. Falko Kuester Lab** || La Jolla, CA

*Apr 2018 - Present*

*Aerodynamics & Aerospace Structural Research Assistant*

- Spearheading the development of 3D printable composite chevron shrouds to improve noise reduction for mitigating environmental disturbances for a 6-rotor Unmanned Aerial Vehicle (UAV)
- Investigating possible manufacturing techniques to increase heat resistance of drones for fire reconnaissance
- Maintaining, repairing, and diagnosing operation issues for 5 of the lab's Fused Deposition Modeling (FDM) 3D printers (3 Ultimaker & 2 3D Platform) to ensure proper functioning for colleagues' on-demand needs
- Wrote grant proposal to secure \$1000 for funding independent research in noise mitigation of the 6-rotor UAV
- Simulated a hexacopter in 5 different adverse near-wall flight scenarios to determine imposed forces for optimizing its control system for flight stability through Computational Fluid Dynamics (CFD) simulations in ANSYS
- Resolved long-term issues of evaluating flight performances of a canard box wing by conducting aerodynamic CFD analyses to advance the 1<sup>st</sup> prototyping of an eVTOL UAV capable of lifting 6kg

## **Fusion Hip-Hop Dance Competition Association || UCSD**

*Jan 2017 - May 2018*

### *Sponsorship Committee Chair*

- Coordinated 3 fundraisers and oversaw the acquisition of 6 sponsors and 4 vendors for one of the largest dance competitions in the West Coast with a growing audience of ~2,000 people
- Mentored a team of 13 new recruits on writing letterheads and partnership proposals
- Served as the liaison between 10+ sales representatives and ~90 Fusion staff members through emailing and phone calls on a weekly basis
- Laid out a workflow to track all past, current, and future relationships with food, dance, and merchandising businesses nationwide to ease future committee chairs in donation and monetary acquisition

## **Rocket Propulsion Laboratory || UCSD**

*Nov 2016 - Sept 2018*

### *Co-Founder, Lead Analysis Engineer*

- Co-founded the organization dedicated to inspiring a current membership of ~70 students now developing a rocket to become the 1<sup>st</sup> university team to design, build, and launch a liquid-propellant rocket into space (330,000ft)
- Mentored colleagues on fundamentals of performing Finite Element Analysis (FEA) and CFD analysis using ANSYS
- Tested propulsive performances of a liquid oxygen/methane engine through a CFD combustion analysis to determine a maximum gas flow speed of Mach 2.8
- Initiated a design trade study on dampening acoustic/combustion instability in liquid propellant rocket engines to prevent performance declination and catastrophic engine failures
- Performed a Fluid-Structure Interaction (FSI) analysis on an engine to ensure no yielding during operation

## **Triton Rocket Club || UCSD**

*Sept 2016 - Mar 2018*

### *Propulsion Project Manager*

- Led the development of the 3<sup>rd</sup> iterative nozzle design for a rocket to be the 1<sup>st</sup> solid-propellant rocket launched into space by a collegiate organization
- Created and managed a bill of materials (BOM) for a propulsion system consisting of 15 parts in preparation for a static fire test on a budget of ~\$2500
- Interfaced with 8 project managers to ensure seamless knowledge transfer and to maintain current documentation for all rocket design parameters

### *Propulsion Engineer*

- Designed an aluminum nozzle extension for an ablative-cooled solid-propellant rocket using SolidWorks
- Optimized the nozzle extension's design for propulsive efficiency upon performing hand calculations
- Applied GD&T to rocket nozzle components for manufacturability using the ASME Y14.5 standard

## **Publications & Presentations**

- Strawson, J., **Tran, D.**, Cao, P., Bewley, T., Kuester, F. *Multicopter Airframe Design with Rotor Orientations Optimized for Fully Actuated Feedback Control*. Expected paper presentation at IROS 2020: International Conference on Intelligent Robots and System
- De Vivo, L., **Tran, D.**, Kuester, F. *Toward Design of a 3D Printable Prandtl Box-Wing Unmanned Aerial Vehicle*. Paper Presented at 2019 IEEE Aerospace Conference. DOI: 10.1109/AERO.2019.8741628

## **Professional Development**

- ANSYS Inc. Certificate of Training: Mechanical Heat Transfer, Fluent Combustion, Fluent Aeroacoustics