Teodorico Nicolau (Teo)

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Education

Oxford Brookes University (OBU) | Oxford, UK **Sep 2023 – Sep 2024**
Master of Science in Motorsports Engineering. (MSc)

CALIFORNIA STATE UNIVERSITY NORTHRIDGE (CSUN) | Northridge, CA **Aug 2018 – May 2023**
Bachelor of Science in Mechanical Engineering. GPA 3.3/4

UNIVERSITY OF HULL | Hull, UK **Oct 2019 - May 2020**
Study abroad coursework in Mechanical Engineering and design.

Experience

Oxford Brookes Racing | OBR **Oct 2023 – Mar 2024**
(Suspension Team Lead) **Oxford, UK**

- Initiated the optimization of the existing suspension design for seamless integration into 2024 vehicle (OBR24)
- Implemented a mounting design for sensor device(s) installation, ensuring validation of the steering and suspension system of the previous year's vehicle (OBR23).
- Led and managed a 20-person team to design and analyze a suspension system for the 2025 Formula Student team (OBR25).

Matador Motorsports Formula SAE | CSUN **June 2022 – Aug 2023**
(Suspension Team Lead) **Northridge, CA**

- Employed advance simulation tools such as OptimumLap, OptimumKinematics, and Siemens Amesim to model and optimize a competition worthy suspension system for a Formula-style internal combustion vehicle.
- Designed decoupled damper/spring assembly to isolate tuning for roll and heave suspension motions.
- Accomplished a 15th place finish out of 120 teams, achieving notable distinction of 11th in design and 13th in endurance at the Formula Student Competition North America at Michigan International Speedway.

Manufacturing Department | Meggitt **June 2022 – Oct 2022**
Manufacturing Engineer (Intern) **Simi Valley, CA**

- Assisted in designing tooling to ease operators' manufacturing time and increase product quality.
- Recorded building-wide equipment survey to produce ease of tooling repair and allocation.

Logistics Readiness Group | United States Air Force **March 2015 - August 2018**
(Mechanical Technician) (Active Duty) **Joint Base Elmendorf-Richardson, Anchorage, AK**

- Executed scheduled and unscheduled maintenance on a snow removal fleet of 950 flight line tractors and general-purpose vehicles valued at $170 million.
- Performed maintenance on 24 Airport Rescue and Fire-Fighting (ARFF) vehicles and structural fire engine/trucks valued at $10.23 million.
- Spearheaded a three-man team to perform scheduled maintenance to meet National Fire Protection Association (NFPA) safety standards.

Projects

Gasoline to Diesel Engine Swap (Personal) | Anchorage, AK **Aug 2017 – July 2018**

- Integrated a Cummins 2.3L diesel engine into a 1990 Toyota 4Runner.
- Conducted a suspension overhaul, resulting from independent front suspension to solid front axle.
- Rebuilt and upgraded a Chevrolet 4L60E transmission, which adapted onto the diesel engine.

Combustion Equilibrium Composition | CSUN **Feb 2022 – Mar 2022**

- Simulated the chemical dissociation inherent in CO2 and H2 + O2 combustion, employing NASA's Chemical Equilibrium with Application (CEA) program and a custom-developed MATLAB code.

Turbofan engine parametric analysis for a Commercial Passenger | CSUN **March 2022– May 2022**

- Performed hand calculation to determine engine thrust performance during cruise conditions.
- Assembled hand-made MATLAB codes to determine engine performance with varying bypass and compressor pressure ratio, and compared to results found in Parametric Cycle Analysis program (Para).

Voron 2.4 3D Printer | Northridge, CA **June 2022 – July 2022**

- Procured and assembled components for an open-source 3D printer.
- Configured Klipper firmware and OctoPrint software code to align with specifications of the Voron printer.
- Enhanced printing efficiency and sophistication by implementation of a CAN bus system and reducing printer head weight, resulting in achieving top speeds of 350-400 m/s.

Bicycle and Suspension Ride Model Optimization | OBU **Oct 2023 – Dec 2023**

- Enhanced the fundamental bicycle model through sophistication such as the incorporation of twin-track configuration and non-linear tire model. All through the use of ADAMS software.

- Facilitated suspension ride optimization through utilizing 1DOF, 2DOF, and 4DOF models with non-linear damping components.

CFD Investigation Project | OBU **Oct 2023 – Dec 2023**

- Conducted a comprehensive Computational Fluid Dynamics (CFD) investigation to analyze front wing and tire interaction of Formula Student vehicle, utilizing Siemens STAR-CCM+ software.
- Designed three Formula Student front wings, ranging from basic to complex geometries, with the primary objective of minimization of drag generation of the front tires.

LMH vs. LMDh Data Analysis Project | OBU **Feb 2024 – Mar 2024**

- Compared the Le Mans Hypercar (LMH) and Le Mans Daytona h (LMDh) through a single simulated lap around the Le Mans Circuit through the use of AVL DriveRace software.
- Analysed the difference in fuel efficiency, energy recovery system, driving style performance, etc.

Formula E Gen 3 Lap-time Simulation | OBU **Mar 2024 – May 2024**

- Adapted the Gen 2 Formula E setup to the new regulations of the generation 3.
- Worked on the vehicle dynamics portions with suspension vehicle setup to optimise performance through a 45-minute Grand Prix. Improved lap time performance by 4.27s per lap through vehicle setup changes.

Leadership & Activities

Logistics Readiness Squadron | United States Air Force **May 2016 - August 2018**
(Mechanic/Technician Trainer) **Anchorage, AK**

- Supervised/trained oncoming Airmen on mechanical skills and demonstrated repair procedures on heavy equipment fleets.

CSUN Formula SAE Team **Nov 2021 – June 2022**
(Suspension Volunteer/Intern) **Northridge, CA**

- Assisted senior members of the Formula SAE suspension team. (CAD, MATLAB, manufacturing, etc.)
- Designed and fabricated welding fixtures and parts for both the suspension and Aero sub-teams.

Bioinspired Mechanics | CSUN **Jan 2022 – Aug 2023**
(Undergraduate Research member) **Northridge, CA**

- Created math models and experimental setup in Bioinspired Fibrillar Dry Adhesives using MATLAB.
- Drafted and manufactured tensile glass platform for an array of Bioinspired fibril adhesive testing.

Civil Engineering Department | CSUN **Jul 2023 – Sep 2023**
(Head Mechanical Designer) **Northridge, CA**

- Utilized SolidWorks CAD software to design a large size concrete 3D printer, to enable rapid construction of concrete walls.

Skills | Relevant Coursework

Technical: SolidWorks CAD, FEA, and VBA/MATLAB programs, Geometric Dimension and Tolerancing (GD&T), Altair HyperMesh, Siemens STAR-CCM, Thermodynamics & Heat Transfer, Fluid/Solid Mechanics, Numerical Analysis, Aerospace Propulsion, Fusion 360, Basic machining (milling, Lathe, etc.)
Interests: Automotive design/dynamics, Vehicle Dynamics, Aerodynamics, Aeropropulsion, Photography, Travel

References

Dr. Stewart Prince | CSUN **Northridge, CA**
(Professor of Mechanical Engineering) | CSUN Formula Student Advisor
Email: sprince@csun.edu Phone: +1 (818) 677 – 3514

Dr. Jamie Booth | CSUN **Northridge, CA**
(Assistant Professor of Mechanical Engineering) | CSUN Research Advisor/Mentor
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