Bradley Dennis

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EDUCATION

University of Maryland, College Park | *A. James Clark School of Engineering*   Expected May 2023
  Major: *B.S. Aerospace Engineering, Space Track*; **Minor:** *Robotics and Autonomous Systems*   **GPA: 3.664**

SKILLS

Software & Languages	Siemens NX & NASTRAN, Teamcenter, ANSYS, Fusion 360, Autodesk, Ubuntu, Excel, Cura
Engineering Tools	CAD, FEA, ASME Y14.5 (GD&T), Python, MATLAB, Arduino, ROS, C++, Aluminum/Steel Machining
Course Experience	Space Flight Navigation, Controls, and Dynamics, Aerospace Structures, Robotics Programming

TECHNICAL EXPERIENCE

Volvo Group Trucks | **Hagerstown, Maryland**   June 2019 — August 2021
Engineering Research and Development Intern – Base Engine

- Worked with an international team to map oil system response to varying CCV inlet sizes for the American and Asian markets.
- Significantly reduced test cell data analysis time and created large collections of mapped oil data to reduce problematic tests.
- Used C++ to program an auto MATLAB plot generator to replace the manual method of test verification.
- Created RFQ documentation for a new Engine Test Rig to run long term wear and system tests without the need for combustion.
- Supported the testing of a new external Oil Control Valve filter to reduce clogging.
- Aided in the creation of a variable oil pump inlet orifice to manage and test engine oscillation for different orifice sizes.
- Analyzed tapered plug failures using microscopic imaging to observe thread engagement and sealant effectiveness/voiding.
- Utilized 3D printed valve lash measurement tool prototypes to test-fit new designs on cylinder head assemblies.
- Designed and implemented an adapter for indexing cam profiles and ramps using a degree wheel and dial indicator.

VCAP Engineering Intern – Production/Assembly Line

- Aided in the design of ergonomic axle assembly line cart layouts by employing lean manufacturing and 5s methodologies.
- Introduced to various labs and field failures in the metallurgy and oil sample labs as well as exhaust analyzers.

UMD Loop Competition Engineering Team | **University of Maryland, College Park**   September 2019 — Present
Not-A-Boring Competition II – Mechanical Systems Lead | *(September 2021 — Present)*

- Lead a team of undergraduate engineers on the mechanical design for the second generation competition boring machine.
- Performed preliminary design and verification of an acoustic local positioning system (ALPS) based around satellite GPS.
- Worked to brainstorm and conceptualize new and innovative mechanical designs for the second Not-A-Boring Competition.

Not-A-Boring Competition I – Skeleton Lead | *(July 2020 — December 2021)*

- Designed a 2-DOF open-centered, hydraulic leadscrew steering system capable of producing 20 kN-m torque in both axis.
- Created a connecting rod system capable of supporting 60 kip pipe jacking force to connect the front and back of the machine.
- Validated structural designs and hand calculations using linear finite element analysis and topology optimization.
- Created 30-page slide decks along side a 120-page Final Design Package to be sent to The Boring Company for final review.
- One of 12 teams chosen to compete in the first Not-A-Boring Competition and received the "Best Team Safety" award.
- Developed in-depth testing and assembly procedures for both the steering subsystem and the skeleton subsystem.
- Analyzed and created animations for the clearances and motion of steering and top level assembly using NX's Motion tool.

SpaceX Hyperloop Competition IV – Special Projects Team | *(September 2019 — July 2020)*

- Designed, analyzed, and constructed a 25-foot long test track following the given SpaceX competition track specifications.
- Fabricated and fully assembled the all aluminum test track in house using milling machines, bandsaws, and taps.

Custom 3D Printed 6-DOF Robotic Arm | **College Park, Maryland**   September 2021 — Present
Personal project expanding in-class knowledge and research

- Designed and constructed a 3D printed 15:1 cycloidal gear box for use on the first and second link of the robot arm.
- Utilized Python to implement custom forward and inverse kinematic solvers and a 3D visualizer for these methods.
- Fully modeled and constrained an assembly of all 6 links of the robotic arm in Fusion 360

PROJECTS AND ORGANIZATIONS

Bipropellant Rocket Engine Design Calculator – RPA clone utilizing NASA CEA data and Excel	June 2021 — Present
Missing Apollo 8 Trajectory Data – Propagated and animated lost trajectory data in MATLAB	September 2021 — Present
Intern For A Day: Curiosity SAM Module – NASA Goddard SFC, MD	November 2020
3D Printed Model Rocket Design, Analysis, and Flight – OpenRocket and Autodesk	November 2019
3D Printed Airfoil Design and Wind Tunnel Testing – FoilSim and Autodesk	October 2018
AIAA; American Institute of Aeronautics and Astronautics – University of Maryland, College Park	August 2019 — Present