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## EDUCATION

**B.S. in Mechanical Engineering,**  
*Oregon State University*

(3.4 GPA) **2013-2017**

**IB Diploma, Cleveland High**  
*School*

(3.8 GPA) **2008-2012**

## REFERENCES

(available upon request)

## SKILLS

System Architecture  
PLC Controls  
Mechanical Design  
Software Development  
Industrial Robotics Programming  
3D Printing  
Design for Manufacture  
Electronics Prototyping  
Manual Machining  
MIG Welding  
CNC Operation  
Web Development  
Public Speaking  
Project Management  
Product Management  
Team Building

# NATHAN NYOLE BUTLER

## PROFESSIONAL EXPERIENCE

### Director of Engineering

**Aug 2022 -Apr 2024**

#### *Timberline Automation and Controls*

**Hybrid - Washougal, WA**

Lead the Engineering and Integration Division to deliver custom robotic solutions for both startups and fortune 500 customers. Developed system architectures from the ground up, for real and simulated data, scalable to a fleet of systems. Technologies included: Beckhoff TwinCAT, Structured Text, InfluxDB, ROS, Python, Docker, and Nvidia Omniverse.

### Lead R&D Engineer - Robotics

**Aug 2022 -Apr 2024**

#### *Sonny's Enterprises Inc.*

**Remote - Tamarac, FL**

Developed edge computer vision solution for preventing collisions in carwash tunnels. Was responsible for full-stack architecture and implementation, ML-Ops, as well as backend for remote configuration and distribution of models to the edge. Technologies used included : Nvidia DeepStream, gstreamer, FastAPI, Azure Blob Storage, and Docker. Deployed to 20+ locations in the field with over the air updates and configuration.

### Robotics Engineer/Product Manager

**Mar 2019 -Aug 2022**

#### *Plover Inc.*

**Portland, OR**

Lead a team of 6 to design and bring a new car wash solution to market using cutting edge 3D scanning and 5 axis Beckhoff PLC controls. Developed technology roadmap for the product line and delivered features on schedule. Developed and maintained software package responsible for +7000 cars washed, while working on SQL logging and OpenCV based features.

### Equipment Design/Controls Engineer

**Sept 2018-Mar 2019**

#### *Siltronic Inc.*

**Portland, OR**

Oversaw maintenance and improvement of the polishing section of a 24/7 silicon wafer production line. Designed a new chemical dosing skid to eliminate breakdowns and improve environmental compliance resulting in a 2x increase in uptime. Served as controls lead for the facility while the site manager was on leave.

### CEO, Co-Founder

**Jan 2015-July 2018**

#### *Form Forge LLC*

**Portland, OR**

Managed a four member team. Designed and maintained CAD product models and reviewed engineering drawings. Installed four custom six axis robotics systems (Fanuc, Comau, ABB). Successfully estimated project costs and managed budget for contract work. Designed electrical systems and configured PLCs for multiple key projects. Delivered over 100 presentations on team progress, and company vision.

### Additive Manufacturing Researcher

**Summer 2014, 2016**

#### *Autodesk Inc.*

**San Francisco, CA**

Developed unique method for bonding carbon fiber reinforced polymers to parts manufactured using Objet style 3D printers, featured in Forbes magazine. Built programmable curing oven for composite parts with PC interface.

### Technical Marketing (Intern)

**Summer 2010, 2011, 2013, & 2015**

#### *Autodesk Inc.*

**Portland, OR**

Managed a team of 6 interns to create tutorial content that was accessible and relevant to other high school students. Studied impacts of additive manufacturing on the traditional supply chain for an Xbox controller. Lead on-campus workshops to promote the use of CAD tools with a focus on Fusion 360.

## AWARDS

### **NASA 3D Printed Habitat Centennial Challenge**

2nd Place 2017

### **VentureWell E-Team Grant \$25K**

2016

### **Civil War Shark Tank**

1st Place 2016

### **FIRST Robotics**

Innovation In Control 2012

by Rockwell Automation 2011

2010

Excellence in Design 2011

by Autodesk

First Lego League World Champion 2007

## APPLICATIONS

Inventor - *Advanced*

TwinCAT3

AutoCAD

Solidworks

NX

Creo

Fusion 360 - *Advanced*

Fusion 360 CAM

Fusion 360 FEA

Rhino

Google Docs

Excel

Git

## PROGRAMMING LANGUAGES

IEC 61131-3 (Ladder, Structured

Text preferred)

Python

Processing

Matlab

C#

HTML/CSS

## RECENT VOLUNTEER WORK

First Lego League Regional Judge

3rd Grade Engineering Presenter

## KEY PROJECTS

### **5 Axis Autonomous Car Wash (2019-2022)**

Lead a team of 6 to design and bring a new car wash solution to market using half the water and chemical of competitors by leveraging a custom 5 axis motion platform, dual LiDAR scanners and a custom pumpstand. Car wash was installed and tested in multiple locations, washing over 300 cars. This was the first car wash in the world to implement 3D scanning, predictive maintenance, and custom toolpathing for each vehicle.

Alpha([https://www.youtube.com/watch?v=suL1\\_iP9ffg](https://www.youtube.com/watch?v=suL1_iP9ffg)) Beta (<https://www.youtube.com/watch?v=4atKaMRvzo>)



### **Thermoplastic Extruder for Large Format 3D Printing (2017-2018)**

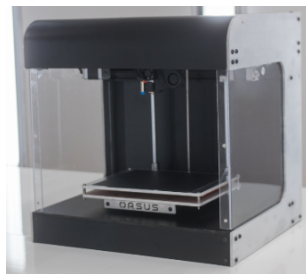
Started as a Senior Capstone at Oregon State University, this project was funded through a \$25K Venturewell E-Team grant I wrote my junior year. Taking this project from concept through production required extensive use of CAD, FEA simulation, as well as a self taught knowledge of polymer extrusion. The result was an industrial tool that offered best in class control and performance, all with less than half the manufacturing cost of the nearest competing product. This project was one of multiple undertaken while I was the CEO at Form Forge LLC.

([https://www.youtube.com/watch?v=F3\\_1M8BJG3g](https://www.youtube.com/watch?v=F3_1M8BJG3g))

### **Waterless Concrete Printer for NASA Centennial Challenge (2017)**

For Phase 2 of the NASA Mars 3D Printed Habitat Centennial challenge, I led a team of four that developed a 3D printer able to print in a combination of HDPE (milk jug) plastic and Silica sand. On a shoestring budget our team was able to secure second place and \$70K in prize money. This would become the foundation on which I founded Form Forge LLC. The final beam was twice as strong as concrete, and used 70% indigenous material to reduce the need to bring materials from earth.

([https://www.nasa.gov/directorates/spacetech/centennial\\_challenges/3DPHab/6-teams-earn-prize-money-in-second-level-of-challenge](https://www.nasa.gov/directorates/spacetech/centennial_challenges/3DPHab/6-teams-earn-prize-money-in-second-level-of-challenge) )



### **World First Hybrid Desktop Manufacturing Tool (2014-15)**

While working as an undergraduate, I developed the first desktop printer able to automatically switch between a 3D printing or “additive” head and a cutting or “subtractive” tool. This combination of technologies combined the ease of 3D printing with the precision of CNC machined parts. This project required an emphasis in design for manufacturing, focusing on the use of off the shelf parts and open source hardware to be able to deliver a product from a garage workbench.

(<https://www.youtube.com/watch?v=ZyeInf7xC9Y>)

### **Micro Textures for Composite Adhesion (2014)**

While working with Autodesk and Lightning Motorcycles to develop strategies for additive manufacturing composite core structures, I developed a method for creating a mechanical bond between the incompatible resin chemistries of the UV cure resins used by polyjet 3D printers and the thermoset resins traditionally used in composites. The results were written up in Forbes Magazine.

(<https://www.forbes.com/sites/bruceupbin/2014/09/10/the-future-of-manufacturing-as-told-in-four-objects/#32dfe94070b2>)

