J. COLE DOUGLAS

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EDUCATION

Dartmouth College, HANOVER, NH

Bachelor of Engineering, Concentration in Mechanical Engineering **June 2020**

Bachelor of Arts, Engineering Sciences **June 2020**

Lean Six Sigma Green Belt, HANOVER, NH **December 2019**

Patents: US20230270428A1, US11465352B1

SKILLS

Software: ANSYS, Arduino (C++), CREO 8.0, Excel, Jira, MATLAB, Minitab, SAP, Siemens NX, Project Place, and SolidWorks.
Technical: Design for Manufacturing/Assembly, Design V&V, Design Controls (21 CFR/ISO 13485), Intermediate GD&T, Mill (CAM), Lathe, Lean Six Sigma, Rapid Prototyping, Project Management, and Vendor Management.

WORK EXPERIENCE

Globus Medical & NuVasive, Inc., *Sr. Development Engineer* **March 2021-Present**

- Collaborated with surgeons, sales representatives, and product managers to create innovative and unique instruments for spinal surgeries with regulatory, manufacturing, and functional design considerations.

Role 1: Led the development of an innovate Anterior to Psoas (ATP) procedure to attack this $94 million dollar procedure market.

- Scoped out setlist for 200+ instruments using surgeon feedback, business considerations, and logistical considerations.
- Designed 200+ unique instruments and retractors components to address functional considerations.
- Generated timelines to hit aggressive development goal of launching within a year.
- Led design surgeon labs to explore procedural risks, instrumentation, and steps to facilitate high-reproducibility in surgery.
- Conducted extensive competitive analysis of existing systems to develop comprehensive product positioning strategy.

Role 2: Designed a patient-positioning system for prone lateral surgery from conception to launch.

- Utilized anthropomorphic data and surgeon input to design reduce ergonomic strain of the system by 25%.
- Designed and iterated several mechanisms within the larger assembly including the bolsters, straps, and lifting mechanism.
- Created impaction test sensor setup using Arduino, and MATLAB to confidently reduce required support load by 30 pounds.
- Performed strength calculations and FEA evaluations to reduce positioner weight by 5 pounds and validate strength.
- Applied extensive GD&T to accurately and appropriately dimension mating assemblies.
- Designed overmolded Santoprene handles to reduce vendor lead times by 18 weeks.
- Prototyped 6+ unique patient fixation concepts. Leveraged manufacturing, regulatory, and mechanical knowledge to determine best option moving forward.

Role 3: Designed 100+ unique customized surgical instruments including retractors, inserters, and trials following tight timelines.

- Created complex instruments from surgeon feedback that have been used in 100's of surgeries in the US and internationally.
- Applied DFM concepts to create machinable instruments in conjunction with internal and external vendors.

Fikst Product Development, WOBURN, MA, *Post-Grad Mechanical Engineering Intern* **August 2020-February 2021**

- Worked with senior engineers to craft thoughtful solutions for various clients in the medical device and manufacturing fields.

Project 1: Conducted a full redesign of gel casting gun to improve usability, experience, and reliability within client specifications.

- Planned and assembled the wiring for the manufacturing apparatus with integrated failsafe controls.

Project 2: Tested and prototyped a saliva-based SARS-CoV-2 test in preparation for large-scale manufacturing.

- Organized a prototype build of 250 for product testing with a team of six engineers.

BOSE, FRAMINGHAM, MA, *PRO Audio Continuous Improvement Mechanical Engineering Intern* **May 2019-August 2019**

- Led a team as the lead project engineer that designed, tested, and validated a tool-free rigging solution on the multipoint adapter for the ShowMatch hanging array frames.
- Designed, iterated, and prototyped a scalable push-button quick pin in conjunction with contract manufacturers.

Tethon 3D, OMAHA, NE, *Research & Design Engineering Intern* **January 2019-March 2019**

- Designed and developed a proprietary ceramic DLP 3D printer for applications in aerospace, architecture, and academia.
- Addressed issues of manufacturing of product at scale and assembly using DFMA concepts to mitigate scalability problems.
- Prototyped heated resin vat for use with stronger 3D print resins using Arduino and DFA/M concepts

LEADERSHIP & ACADEMIC INVOLVEMENT

Dartmouth Varsity Football Player, HANOVER, NH, *Quarterback* **August 2016-November 2019**

- Trained continuously throughout the year to achieve the goal of being Ivy League Champions.