Michael Stevens

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Redwood City, CA

ACCOMPLISHMENTS

Mechanical Engineer with a proven history of advancing robotics with state-of-the-art technologies. 7+ years of experience with startups, commercial and government projects in a variety of applications including agriculture, medical, and industrial.

EXPERIENCE

Nimble Robotics — San Francisco, California
Senior Mechanical Engineer — (June 2021- Present)

Senior engineer for a startup focused on deploying a robotic fulfillment warehouse. Responsibilities include project management, 3D design modeling, FEA, 2D drawing generation, PDM, procurement, BOM management, fabrication, in-field repair, mentoring junior-level mechanical engineers cross-level team coordination, and refining designs for production.

- **3 DOF Bin Lift and Grapple**: Accountable for design, integration, testing, and production of a lifting system to transport products in a densely packed environment

Abundant Robotics — Hayward, California
Senior Mechanical Engineer — (August 2017 – June 2021)

Senior engineer for an autonomous apple-picking robot platform. Accountable for multiple sub-assemblies each with 100's of unique parts. Responsibilities for each subsystem included: requirements documents, FMEA's, project management, 3D design modeling, FEA, 2D drawing generation, PDM, procurement, BOM, fabrication, in-field repair, maintenance, reliability testing, failure testing, cross-level team coordination, and refining designs for low-cost solutions.

- **8 DOF Mobility Base**: All-electric mobility system with independent steering and drive axis for each wheel.
- **Dispense mechanism:** Sheet metal construction for safely sensing, capturing, and conveying fruit with repeated reliability over the course of millions of cycles
- **Bin Lift and Spin 2 DOF:** Custom slotted fork design to be robust against ground disturbances while supporting 1100 lbs of apple bin weight. Extrapolated on existing industry designs to modify a COTS bin filler head that mechanically coupled four other conveyor assemblies to one actuator in order to reduce cost, complexity, and possible failure points.

SRI International — Menlo Park, California
Research Engineer III — (March 2014 – August 2017)

Developed requirements, provided analysis, designed prototypes, fabricated assemblies, and verified a wide variety of novel robotics research for business and government clients. Responsible for multiple robotic projects from concept to beta stage

- **3 DOF Underactuated Robotic Manipulator**: Produced a set of seven next-generation robotic end effectors for the DARPA Robotics Challenge (DRC) Track B teams in under 9 months.100 lbs of grip force per finger, underactuated modular finger assembles, robust durability, absolute position sensing for each joint, exquisite tendon force control and total weight at 2 kg.
- **1 DOF Exoskeleton Actuator**: Novel actuator responsible for high contraction force with low mass for a DARPA running exoskeleton suit that propelled the operator at an 8 mph pace for 30 mins with a 100 lb load.
- **Motobot Twisted String Actuators:** Developed the upper torso for an autonomous motorcycle-riding robot that competed against Valentino Rossie for Yamaha.
- **Robominer**: Led mechanical effort of a mobile humanoid inspection platform with 2 DOF torso, 5 DOF hands, and 2 DOF head and wheeled base for use in open-pit mining demolition for Enaex.
- **5 DOF Humanoid Hand**: Created a medium-duty payload end effector with increased dexterity suitable for general-purpose robotic manipulation. The prototype included servo drive units, harmonic based actuators, time of flight camera, tendon load cells, and position sensors packaged in a compact form factor with a quick disconnect wrist

Institute for Critical Technology and Applied Science Lab — Blacksburg, Virginia
Research Scientist — (*August 2011- June 2013)*

Designed, manufactured, and assembled a full-scale humanoid robot torso with teleoperation control for assistive tasks.

- **16 DOF Humanoid hand**: Servo-driven cables with bend sensors for closed-loop control. Developed in 12 weeks.
- **Skeletal Tracking Controller**: Developed and implemented algorithms in LabVIEW to take skeletal tracking data from an Xbox Kinect sensor and map the user's motions to robotic arms through controller design and simulation.

SKILLS

- **Computer skills:** Solidworks CAD/FEA, PDM, GrabCAD, Inventor, LabVIEW, Simulink, MatLab, CAM, Python
- **Manufacturing skills:** CNC Machine/Tool pathing, Rapid Prototype (Direct 3D, FDM, SLS), Vacuum Forming, Lathe, Welding, Sheet metal fabrication, Casting, Drill Press, Soldering

EDUCATION

- **M.S. Mechanical Engineering, Robotics**
  Virginia Tech, Blacksburg, Virginia (*May 2013)*
- **B.S. Mechanical Engineering**
  Virginia Tech, Blacksburg, Virginia (*May 2011)*