

# Michael Stevens

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Redwood City, CA

## ACCOMPLISHMENTS

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Mechanical Engineer with 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

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### Abundant Robotics

Senior Mechanical Engineer

Hayward, California  
(August 2017 – present)

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 weight. Extrapolated on existing industry designs to modify a COTS bin filler head that mechanically coupled 4 DOF to one actuator in order to reduce cost, complexity and possible failure points.

### SRI International

Research Engineer III

Menlo Park, California  
(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 hand for the DARPA Robotics Challenge (DRC) Track B teams in under 9 months. 100 lbs of grip force per finger, underactuated modular finger assemblies, 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 a 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 Rossi 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

Research Scientist

Blacksburg, Virginia  
(August 2011- June 2013)

Designed, manufactured, and assembled a full scale humanoid robot torso with teleoperative 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 users motions to robotic arms through controller design and simulation.

## SKILLS

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- **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

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