

# MERRICK P. CAMPBELL

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## TECHNICAL STRENGTHS

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| <b>Mechanical</b>       | Additive Manufacturing, Lathe/Mill/CNC, MIG Welding, Shock/Vibration                         |
| <b>Electrical</b>       | Wire Harnesses, Connector Selection, PCB Layout, Soldering                                   |
| <b>Computer Science</b> | Linux, C/C++, Python, Java, MATLAB, LabVIEW, ROS, Git, HTML, L <sup>A</sup> T <sub>E</sub> X |
| <b>Design Tools</b>     | Solidworks, Fusion 360, OpenSCAD, Final Cut Pro, Photoshop, Illustrator                      |

## EXPERIENCE

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**UCR Autonomous Robots and Control Systems Lab (ARCS)** *January 2021 - Present*  
*Graduate Researcher*

- Designed and constructed a robotic end effector to cut and retain leaves for stem water potential analysis
- Programmed a 6-DOF Kinova robotic arm to autonomously detect, localize, and cut 20+ avocado leaves
- Integrated an ECa soil sensor onto robotic platform to measure soil conductivity and improve watering practices

*Teaching Assistant:* EE153 Electric Drives (S21), EE175A/B Senior Design Capstone (F21/W22)

**Tanner Research** *June 2016 - December 2020*  
*Engineer* *June 2015 - September 2015*

- Supported over \$5 Million of research and development contracts from bid & proposal to functional prototype
- Wrote a Java app to transform an Android cellphone into a flight controller for disaster relief sUAS (USN)
- Designed a SCUBA rebreather's metal 3D printed heat exchanger using a Python thermal model (USSOCOM)
- Won a \$100,000 SBIR and built a 16 lb carbon fiber robotic arm with an 8 foot reach in 9 months (USDA)
- Developed C++ farm furrow following algorithm using OpenCV to run on Jetson TX2 computer (USDA)
- Designed and assembled custom large format FDM 3D Printer with 8 cubic foot print volume
- Served as webmaster and primary maintainer of Git repositories

**UCLA Smart Grid Energy Research Center (SMERC)** *May 2014 - June 2015*  
*Undergraduate Researcher*

- Led a team of 10 undergraduate students to fabricate Level 2 electric vehicle (EV) chargers
- Performed and documented QA tests on EV chargers for L.A. Electrical Testing Lab and UL Certification

## EDUCATION

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**University of California Riverside (UCR)** *September 2020 - June 2022*  
Marlan and Rosemary Bourns College of Engineering *M.S. Electrical Engineering*

**University of California Los Angeles (UCLA)** *September 2012 - June 2016*  
Henry Samueli School of Engineering and Applied Science *B.S. Mechanical Engineering*

## AWARDS AND HONORS

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|------------------------------|--|
| <b>UCLA Academic</b>         | 3 <sup>rd</sup> Place Senior Capstone Robotics Competition ( <i>Spring 2016</i> )<br>Dean's List ( <i>Spring 2014</i> )<br>Engineering Department Merit Scholarship Recipient ( <i>2012-2016</i> ) |
| <b>Boy Scouts of America</b> | Eagle Scout, Order of the Arrow  |

## SELECT COURSES

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### UCLA

Manufacturing Processes  
Rapid Prototyping  
Micro & Nanoscale Fabrication  
Composite Materials  
Dynamic Systems & Control  
Design Thinking (Extension Course)

### UCR

State & Parameter Estimation Theory  
Advanced Computer Vision  
Computational Learning  
Intro to Deep Learning  
GPU Architecture & Parallel Programming  
Real Time Embedded Systems

## PUBLICATIONS

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Merrick Campbell, Keran Ye, Elia Scudiero, and Konstantinos Karydis. A portable agricultural robot for continuous apparent soil electrical conductivity measurements to improve irrigation practices. In *IEEE 17th International Conference on Automation Science and Engineering (CASE)*, pages 2228–2234. IEEE, 2021

Kevin Urrutia Avila, Merrick Campbell, Kerry Mauck, Marco Gebiola, and Konstantinos Karydis. Development and testing of a smart bin toward automated rearing of black soldier fly larvae. In *IEEE 18th International Conference on Automation Science and Engineering (CASE)*, page (preprint). IEEE, 2022