Clayton Salinger Ketner

Mechanical Engineering & Software Development

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INTRODUCTION

Mechanical engineer and software developer with strong practical experience, close attention to detail, and an interest in robotics, design, and fabrication. Highly organized, friendly, and eager to learn new technologies.

TIMELINE

June 2014 – Present

Automation Engineer IV – *Myriad Women's Health (formerly Counsyl)*

Designed new, and improved existing, automation hardware and software for robotic DNA processing lab.

- Primary mechanical design engineer
  - Designed mechanical parts and assemblies in SolidWorks. DFM, DFA, part selection (COTS, OEM)
  - Performed requirements gathering, prototyping, and testing to validate and de-risk
  - Established best practices and workflows for parts tracking and documentation
  - Invented multiple novel designs (one patent application)
  - Reviewed and mentored other engineers' mechanical design work
- Controls engineer:
  - PLC software development with Beckhoff PLCs (TwinCAT 3)
  - Established best practices and workflows for PLC development
  - Design and implementation of robotics safety systems using Beckhoff TwinSAFE
  - HMI design and implementation with Beckhoff HMI and Wonderware HMI
  - Regarded as the subject matter expert for anything PLC related
- Project/tech lead:
  - Team lead for a project involving redesigning an existing robotics workcell to improve sample volume capacity, user interaction, and reliability
  - Also acted as the technical lead for other subteams of the project, providing expertise on automation equipment and processes
  - Cross-functionally gathered requirements, led design reviews, and managed equipment and system validation across the CLIA lab staff, equipment service team, and development scientists
  - Assessed what work was required, generated and maintained a timeline, and tracked and distributed work amongst myself and others
  - Successfully completed the project ahead of schedule and without issues
- Software engineer:
  - Took on app and instrument driver work from the software team when necessary
  - General scripting with Python
- Designed and documented mechanical and electrical assemblies for contract manufacturing
- Performed troubleshooting on complex systems involving hardware, electronics, and software issues to identify root cause and provide fixes
- Utilized machine shop skills to create one-off fixtures and parts as needed

2016, 2018

LED Clock – *personal, for-fun project (click for writeup)*

- 40x16 LED matrix clock built with an Arduino and Raspberry Pi
- Later redesigned to use a 64x32 RGB LED matrix driven by an FPGA and Raspberry Pi

2009 – 2014

Graduated from University of Southern California (USC) – *(extra year due to transfer)*

- **BS ME**: CAD (adv. modeling and FEA), adv. strength of materials, linear control systems, heat transfer
- **Minor CS**: Robotics algorithms, artificial intelligence

Summer 2013 (4 months)

System Administrator – *San Bruno Pet Hospital*

- Independently maintained and installed hospital information management computer system and peripherals
- Communicated with employees and external tech support to report and resolve technical issues
- Received praise for improving the reliability of the hospital's hardware and software

Summer 2011 (3 months)

Virtual Campus Intern – *OSIsoft*

- Independently integrated OSIsoft's data collection software with an external analytics software
- Concluded findings in a White Paper posted to OSIsoft's vCampus website
- Received praise from an outside company (OPX Biotechnologies, Inc.) for the White Paper

SKILLS

My Favorite (Hobby) Tools
Mechanical – SolidWorks, OnShape
Hardware Prototyping – my Makergear M2 3D printer, mill, lathe, etc.
Programming – VIM, tmux, Python, Django, git
I/O – Raspberry Pi, Arduino, Teensy

Mechanical & Controls Engineering
CAD – SolidWorks, Pro-E, Solid Edge, PDM, stress/strain and vibration FEA
Design – GD&T, design for assembly and manufacture (DFA, DFM)
Controls Engineering – Beckhoff TwinCAT 3 and TwinSAFE, equipment and system specification and design
Etc. – control systems, MATLAB & Simulink, LabVIEW, Mathematica, technical report writing

Software Development
Languages – Python (+Django), bash/sh, C++, HTML
Etc. – git, Linux, TDD

Other
Hands-on – mill, lathe, CNC, CAM, 3D printing, welding, soldering, wiring
Project Management – Smartsheet, JIRA, Confluence

EXTRAS

Right now
Personal Projects – *See my website! claytonketner.com*
Hobbies – *Cycling (road and gravel/mountain), cycling to bakeries, camping, snowboarding*

Spring 2014
USC Aerial Robotics Team – *Mechanical team* : provided significant design improvements to the quadcopter design, including: manufacturability, assembly, and ease of use.

Fall 2013
Dean's List – *USC*

Spring 2010
Dean's List – *UMass*

March 2012
Certified SolidWorks Associate – *Score: 100%*