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

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

June 2014 – Present

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

- Primary mechanical design engineer
  - Designed parts, fixtures, and assemblies for multiple robotic sample processing workcells
  - Key player in the design of the overall workcell layout and workflow
  - Designed mechanical parts and assemblies in SolidWorks. DFM, DFA, part selection (COTS, OEM)
  - Performed requirements gathering, simulation, 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) on systems involving waste handling, facilities monitoring, and automation motion control with a high level of functionality
  - 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
- Software engineer:
  - Took on app and instrument driver work from the software team when necessary
  - General scripting with Python
- Project/tech lead for a project involving redesigning an existing robotics workcell to improve sample volume capacity, user interaction, and reliability
  - 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/system validation across the CLIA lab, equipment service, applications, and science teams
  - Assessed what work was required, generated and maintained a timeline, and tracked and distributed work amongst myself and others
  - Designed and executed new thermocycler equipment validation and testing processes
  - Successfully completed the project ahead of schedule and without issues
- Designed and documented mechanical and electrical assemblies for contract manufacturing
- Performed troubleshooting on complex systems involving hardware, electrical, and software issues to identify root cause and provide fixes
- Utilized machine shop skills to create one-off fixtures and parts as needed

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

2016, 2018

- 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

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

2009 – 2014

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

System Administrator – *San Bruno Pet Hospital*

Summer 2013 (4 months)

- 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

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Virtual Campus Intern – *OSIsoft*

Summer 2011 (3 months)

- 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 Spring 2010	**Dean's List** – *USC* **Dean's List** – *UMass*
March 2012	**Certified SolidWorks Associate** – *Score: 100%*