Johnathan J. Flaggs
Software & Automation
UCR, BCOE | BSME
Phone: 916.397.5938

Dear Team,

Please accept this letter and the accompanying resume as an expression of my interest in your open Software Engineer position. My primary focus has been in technology. Specifically, in Software Architecture and Algorithm Development, Industrial Automation, and Technology Consulting. Ideally, I am seeking to contribute my knowledge and experience to a fast-paced company in California.

I graduated from the University of California, Riverside with a bachelor's degree in Mechanical Engineering and a concentration in Control Systems Theory and Analysis. I currently develop software as a Robotics Software Engineer and I enjoy Financial and Embedded projects as well.

I have worked with industries including manufacturing, aerospace, medical, industrial packaging, OEM automation, and digital storage. My contributions in these industries have been in robotics, industrial software development, machine vision, multi-fieldbus integration, User Interface (UI) development, documentation control, and much more. I am truly privileged to have the industry experience and exposure that I do; and I have been humbled by the professional opportunities I have been part of.

I would like to reiterate my strong interest in your Software Engineer position, and I look forward to an opportunity to discuss details in person. Please feel free to contact me by phone at 916-397-5938 or by email at johnathanflaggs@gmail.com if I may provide you with any additional information. Thank you for your time.

Sincerely,

Johnathan J. Flaggs

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Phone: 916.397.5938

Highly professional, competent, personable, and team-orientated. Possesses strong problem-solving, organizational, and time-management abilities. Professional references available upon request.

Education

University of California, Riverside (UCR) **Sep. 2010-Jun. 2014**
- BSME, BCOE, Dept. of Mechanical Engineering

University of California, Davis (UCD) **Aug. 2013-Sep. 2013**
- Controls Courses. Dept. of Mechanical and Aerospace Engineering

Professional Engineering Experience

Senior Robotics Software Engineer at Amada Miyachi **Nov. 2019-Apr. 2020**

Developing software for Seam Sealing machines used primarily for medical and aerospace/defense customers. My contributions include:

- ***Windows*** *C# machine and vision process controls*
- ***Machine-Vision*** *Calibration to establish precision robot coordinates.*
- ***Integration*** *of various real time third-party measurement devices.*
- ***User Interface*** *Allowing users to fluidly interact with the multi-threaded application.*
- ***Version Control*** *Using GIT*

Senior Robotics Software Engineer at Seagate Technology **Mar. 2017-Mar. 2019**

Developing software for cutting edge processes in digital storage technology. My contributions include:

- ***Windows*** *C# proprietary machine and vision process controls*
- ***COGNEX*** *VisionPro API integration*
- ***Machine-Vision Calibration*** *to establish precision robot coordinates.*
- ***Integration*** *of various third-party devices.*
- ***Motion Control*** *Kinematics, pick-n-place, multi-axis coordination, Quantum HSM framework.*
- ***User Interface*** *Allowing users to fluidly interact with the multi-threaded application.*
- ***Version Control*** *Using SVN, TFS and Agile/Scrum using Jira.*
- ***OOP*** *Heavy emphasis on encapsulation, inheritance, polymorphism, and robust design patterns.*

Professional Engineering Experience

Software Controls Engineer at Dynamic Automation **Apr. 2016-Apr 2017**

Developing software for specialized industrial machines in the medical, automotive, and aerospace industries. My contributions include:

- ***PLC/HMI*** *programming in the Rockwell/Allen Bradley suite*
- ***FANUC*** *Robot programming and iRVision application development*
- ***COGNEX*** *In-Sight vision programming*
- ***MagneMotion*** *MagneMover LITE programming*
- ***Integration*** *of various third-party devices (RS-232/485 serial devices, barcode scanners, etc)*
- ***Windows*** *Batch/C# programming for supporting IT and OT needs.*

Lead Automation Controls Engineer at Sorenson Engineering Inc. **Sep. 2014-Mar. 2016**

Coordinating with the Technology Engineering (TE) team to develop unique machines for high-volume manufacturing. Specifically, I develop software to control industrial robotics hardware such as: stepper/servo motors, linear motors, industrial cameras, and various other IO. My contributions include:

- ***Power Distribution*** *–Layout of power distribution from the main line control components.*
- ***Fieldbus Integration*** *– Integrating third-party hardware/software nodes into a controls network*
- ***Motion Control*** *– Kinematics, motor sizing, pick-n-place, multi-axis synchronization, and axis coupling*
- ***Vision Inspection*** *– Driving digital cameras (Cognex, Baumer/VeriSens)*
- ***Usability*** *– Run-time configuration management for engineers, technicians, and operators*
- ***Reduced*** *machine development cost by:*
  - *Implementing PTP motion rather than software cammed motion (CBM)*
  - *Eliminating the need for an expensive measurement sensor (CBM)*
- ***Enhanced*** *a machine's performance by decreasing rotor-inertia ratio by 140% for tighter position control (VSIII)*

Technical Toolset

My Development Platforms:

▪ RSLogix/FactoryTalk	▪ Beckhoff TwinCAT	▪ MagneMotion	▪ Fanuc Robotics	▪ Fanuc iRVision
▪ Cognex In-Sight	▪ Baumer/VeriSens	▪ Visual Studio	▪ MATLAB /Simulink	▪ SVN/GIT/Jira
▪ Atmel Studio	▪ CodeBlocks	▪ Solidworks	▪ Np++, Sublime	▪ Brackets

My Development Languages:

▪ PLC: ST, SFC, FBD, LL	▪ Embedded: C, C++	▪ Web: HTML, CSS, JS	▪ Windows: C#, BAT	▪ Robotics: TP, TP++
▪ Prototyping: MATLAB				

Academic Engineering Experience

Numerical Analysis and CAD Projects at UCR/UCD **Mar. 2013-Jun. 2014**

- *Collaborated* with a team of three senior design classmates to design, fabricate, and verify an intercooler leak test system for Ironman Parts and Services©.
- *Collaborated* with group of 11 undergraduates to design, fabricate, and test turbine blades for the EPA P3 2014 project. The turbine will be used to extract tidal energy after EPA final approval.
- *Designed* a Lag-Lead compensator using Modern Control Theory, MATLAB Sisotool, and Simulink for tuning and verification.
- *Modeled* thermal distributions in a Composite Printed Wiring Board in MATLAB by using the Finite Difference Method to solve Laplaces' Equation in two dimensions.
- *Programmed* a MATLAB simulation of a robotic arm with two DOF. Simulation uses ode45 to solve the differential equations of motion as the robotic arm is instructed to translate.
- *Developed* a SolidWorks model and 3-dimensional stress analysis of a bicycle crank-arm for the purpose of a material recommendation which meets factor of safety requirements.
- *Scaled-down* bridge design, fabrication, and failure prediction using MATLAB, SolidWorks, and 2D stress analysis. Models were then experimentally verified to predict bridge failure within 1%.

Bourns College of Engineering: Undergraduate Research **Nov. 2012-Sep. 2014**

- *Developed* a control systems model for a nine-segment bipedal robot based on human gait cycle studies. The model uses the ZMP criteria for stability in the forward solution, and uses interpolated human gait data in the inverse dynamics solution.

Technical Elective Courses at UCR/UCD **Jan. 2013-Jun. 2014**

- *Completed* the following courses as technical electives in addition to the required engineering courses:

▪ Feedback Control II ▪ Heat Transfer II ▪ Dynamic Analysis of Mechanisms ▪ Bipedal Walking Research

Involvement

Kappa Sigma, Riverside (KΣ) **Jan. 2012-Present**

- Completed over 100 hours of volunteer service--collaborating with organizations such as Habitat for Humanity, Embrace, SHARP at UCR, and American Red Cross.
- Member of the ΣY Brotherhood Committee. Received the 2013 KΣ Service Award for commitment to my community

Professional Engineering Experience

Automation and Controls Engineer at Cepheid Oct. 2020-Jun. 2021

Commissioning, debugging, and supporting automated work cells designed to produce Covid-19 test kits. This requires knowledge of both device level hardware and software system components in order to bring the work cells up to operating state in compliance with regulations.

Software and Automation Engineer at Belco Packaging Systems Mar. 2017-Mar. 2020

Provided engineering consulting for the development of their packaging line. Consulting included optimization of existing motion control and validation of existing machine software. I also developed a C# api for integrating a generic off the shelf barcode scanner into their existing TC3 application and C# UI.

- ***Software Consulting*** *for motion control optimization.*
- ***IO Integration*** *of generic industrial serial COM barcode reader using C#.*

Financial Software Engineer – Algorithmic Trading Platform Jan. 2017-Jan. 2021

Developed an algorithmic trading platform which integrates multiple brokerage API's for live, simulated, and historical trading/analysis. The platform is multi-threaded and supports many unique features that are not available via popular trading platforms. This project was started in order to write algorithms to trade the Binance exchange before other platforms supported it. It has since evolved into a multi-brokerage application with full charting, strategy, indicator, and analysis support.

- ***Developed*** *an easy to use strategy/indicator language.*
- ***Multi-Threaded*** *C# application allows real time data streams and smooth UI.*
- ***Modular*** *architecture allows any UI to consume the Satsy.App backend application.*
- ***Supports*** *live and simulated trading with TD Ameritrade, Binance, Gain Capital, and Simulated brokerages*

Embedded Software Engineering – 16^3 3D LED Display Jan. 2015-Jan. 2016

Developed an embedded C application for displaying images to a display of 12,288 pixels (4,096 RGB LEDs). The purpose of this project was to come up with a clever way to leverage the 8-bit ATMEGA328p MCU to control a large amount of IO. The image data is fed from an image source via SPI or UART, double buffered, and then latched to the outputs in parallel on multiple ports. Because of the large number of independent IO, I used multiplexing and bit angle modulation to control the display. The frequency of multiplexing can be adjusted based on the desired refresh rate of the display, and the resolution of the bit angle modulation can be adjusted to obtain the desired color depth of the image or video.

- ***Embedded System*** *developed on ATMEGA328p 8-bit MCU in ATMEL Studio*
- ***Double-Buffered*** *images to display while collecting next data frame over SPI*
- ***Interrupt-Driven*** *code using built-in timer and SPI interrupts.*
- ***Configurable*** *multiplexing, bit angle modulation, and refresh rate*

Web Developer and Web Master at Housing Innovation Partners Jan. 2018-Jan-2019

Developed a static website for a non-profit organization focused on providing housing to those in need. I worked with the business owner to develop a website from scratch using HTML5, CSS3, and used some Bootstrap and Font Awesome to make it more appealing. I also hired a logo designer from Google to give the website a more professional look. Thereafter, I acted as the web master to setup and manage email forwarding, donations, etc.

- ***Web Development*** *using HTML5, CSS, and Bootstrap*
- ***Web Master*** *managing email server and donation account.*